Here's your pre-show peek at the

CHEMICAL INDUSTRIES' EXPOSITION

Philadelphia: Dec. 5-9

see page 10

chemical processing

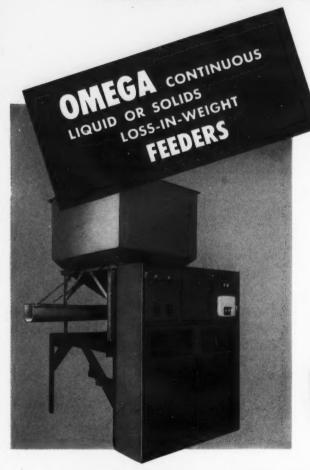
- Dry material metered as accurately as liquid
- Recovers uranium from used fuel elements
- How electronic control stacks up at Atlantic
- Table of Contents

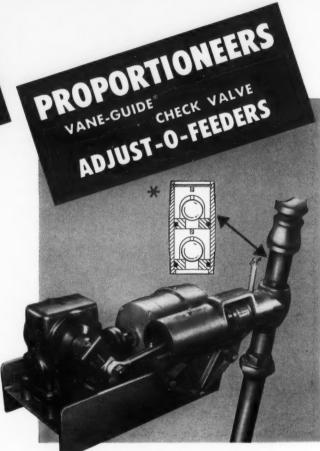
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Nylon in battleships saves weight & \$\$\$

Merely by changing material and design for one type of electrical fitting, the Navy has reduced the weight of large aircraft carriers by an estimated 30 to 45 tons.

The fitting, a "stuffing tube" used to form a water-tight seal where an electrical cable enters a fixture or terminal box, is now molded from Zytel nylon resin, a Du Pont product.

Dollars are also saved since only nine types of nylon fittings are needed where 27 different styles of metal fittings were needed formerly . . . and, of course, welding and repainting of terminal boxes has been eliminated.

Every cold water faucet is a "hot" prospect

Hot water from a cold water faucet sounds like somebody switched handles . . . but there's a unit available that gives hot water instantly from the cold tap.

Called the Thermojet, it attaches to the cold water faucet, plugs into the electric outlet, and is ready to go. Current is used only to heat water — when water is off, no current is used.

This faucet hot water heater is a product of Greatex Products, Inc., Dept. CP, 890 Sixth Ave., New York 1, N. Y. Check CP 1708 on form opp. last page.

(Continued on page 247)



For more information on prodduct at left, specify CP 1709 . . . see information request blank opposite last page.

chemical processing

(CHEMICAL PROCESSING PREVIEW)

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Vol. 18

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November, 1955

No. 11

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CHEMICAL PROCESSING — Why is it liked?

Why is CHEMICAL PROCESSING read so thoroughly by management, production, and research men? One principal reason is that these men find the many stories about actual plant operations, carried in each issue, of particular value to them in their jobs.

This is brought out in a typical comment received in a recent letter from the chief corrosion engineer of a large chemical company: "Of specific value, I believe, are the very short treatments of individual problems reported by various industrial concerns. This represents a very practical presentation, to my way of thinking, difficult to improve upon."

The question has been asked how it is possible for us to obtain stories on plant operations.

The answer is that we have an editorial staff of ten men who are actively digging for story leads, traveling to all parts of the country, talking to technical men, taking photographs. It isn't easy to get these plant stories but the effort is justified by the results.

Why are these articles accurate and important to men in the chemical field? It is because these plant stories are not "cooked up" over a desk — but are written from information obtained directly from the man in charge of an operation. As an extra check, the final manuscript, written by the editor, is "verified" by this plant man prior to publication.

If you'll look up articles shown under Highlights on this page or turn to those in the New Solutions section starting on page 12, you'll find many of these plant articles.

Gordon Weyermuller

- For more information on articles and advertisements in this issue, check the handy Reader Service slip opp. last page
- The product directory, pages 237 to 240, is your guide to all articles and advertisements
- To subscribe to this magazine, see reader-qualification form opp. last page

Guest Editorial

Chemical Expansion

Highlights for Next Month

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THIS MONTH'S COVER

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A trip around the 25th Exposition of Chemical Industries in Philadelphia (Dec. 5-9) should bring a wealth of ideas to the alert processing man. Our cover depicts just some of the things he will see as he trudges from booth to booth. Starting on page 10 is a preview of "who's showing what."



Nov 1-5. World Symposium on Applied Solar Energy. Phoenix, Arizona.

Nov 9-11. Nineteenth Annual Time and Motion Study and Management Clinic, sponsored by Industrial Management Society, Sherman Hotel, Chicago.

Nov 14-15. Chemical Market Research Association, joint meeting with Commercial Chemical Development Association, Hotel Carter, Cleveland.

Nov 14-17. American Petroleum Institute, Annual Meeting, St. Francis, Fairmount, Palace, and Mark Hopkins Hotels, San Francisco.

Nov 14-17. Second International Automation Exposition, Navy Pier, Chicago.

Nov 14-18. American Public Health Association, 83rd Annual Meeting, Municipal Auditorium, Kansas City, Mo.

Nov 16. Society of Plastics Engineers, Inc., one-day symposium on Plastics for Packaging, New York City.

Nov 22. Manufacturing Chemists' Association, Fifth Semiannual Meeting and Winter Conference, Statler Hotel, New York City.

Nov 27-30. American Institute of Chemical Engineers, Annual Meeting, Statler Hotel, Detroit.

Nov 28-Dec 1. 9th Exposition of the Air-Conditioning and Refrigeration Industry, Atlantic City.

Dec 1. Synthetic Organic Chemical Manufacturers' Association, annual dinner, Commodore Hotel, NYC.

Dec 5-7. Chemical Specialties Manufacturers' Association, Annual Meeting, Roosevelt Hotel, NYC.

Dec 5-9. 25th Exposition of Chemical Industries, Commercial Museum and Convention Hall, Philadelphia.

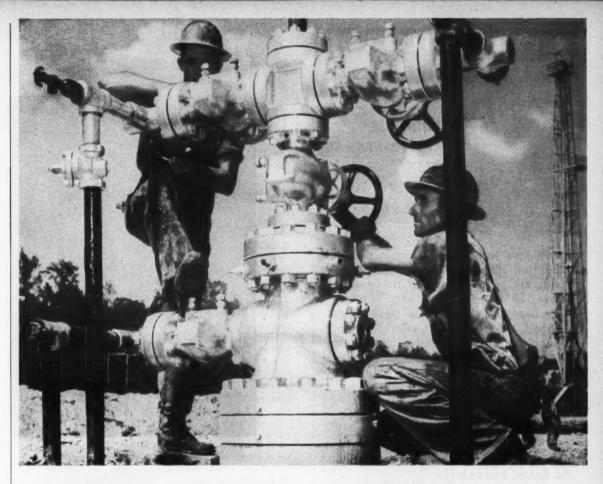
Dec 6-7. The Society of the Plastics Industry, Inc., Sixth Film, Sheeting and Coated Fabrics Division Conference, Hotel Commodore, NYC.

Dec 10-16. International Atomic Exposition and Nuclear Engineering and Science Congress, Public Auditorium, Cleveland.

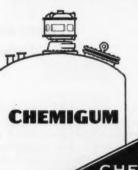
Dec 12-14. American Pharmaceutical Manufacturers' Association, Mid-year and Eastern Section meetings, Waldorf-Astoria Hotel, NYC.

Jan 18-20, 1956. Society of Plastics Engineers, 12th Annual Conference, Hotel Statler, Cleveland.

Jan 23-26, 1956. Plant Maintenance & Engineering Show, Convention Hall, Philadelphia.



Something new under the Christmas tree



The "TREE" is the complicated arrangement of valves, fittings and gauges used on wells to control the flow of oil. What's new is the blend of CHEMIGUM and PLIOFLEX used in the soles of the shoes worn by the driller and his crew.

CHEMIGUM is a nitrile rubber. PLIOFLEX is a styrene rubber. In the past, CHEMIGUM has been used alone in extremely oil-resistant shoe soles, while PLIOFLEX has been used in high quality, general purpose soles. Now they have been blended to provide a sole better in combined oil resistance and wearing properties than those of other types

of rubbers or blends-and at much lower cost.

GOOD YEAR In addition to improved properties and costs, you'll also find these CHEMIGUM/PLIOFLEX blends will process easily. That's because CHEMIGUM, the easy processing nitrile, processes much like PLIOFLEX.

Why not learn more about CHEMIGUM/PLIOFLEX blends for shoe soles and other oil-resistant rubber goods, today? For details, write to: Goodyear, Chemical Division, Akron 16, Ohio.

Chemigum, Pliobond, Plioflex, Pliolite. Plio-Tuf, Pliovic -T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

The Finest Chemicals for Industry — CHEMIGUM . PLIOBOND . PLIOFLEX . PLIOLITE . PLIO-TUF . PLIOVIC . WING-CHEMICALS

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DORE'S NEW TEFLON LINED EXPANSION JOINTS

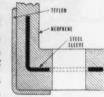


WITHSTAND TEMPERATURES TO 425°F. PRESSURES TO 150 P.S.I.

Extensive tests by Doré prove that unsupported TEFLON Bellows and Expansion Joints are not successful at temperatures above 150°F. — pressures over 50 p.s.i.

To overcome this problem, Doré has developed, and recommends, expansion joints and bellows of Neoprene or high temperature rubber lined with TEFLON. Thus supported, TEFLON can be successfully used at higher temperatures and pressures.

An L-shaped steel sleeve imbedded in the duck and Neoprene prevents distortion of the flange, transmits pressures directly to the



TEFLON extending over flange face to assure a flange-to-flange seal that defies leaks.

This new combination gives you a leakproof bellows that incorporates the advantages of TEFLON with the pressureand-temperature resistant advantages of Neoprene or high temperature rubber.

THERE IS A BELLOWS AND EXPANSION JOINT TO FIT YOUR REQUIREMENTS.

TEFLON Lined Neoprene Expansion Joint
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TEFLON Lined Neoprene Expansion Joint
Style E.S.NV
150 p.s.l. or 28" vacuum at 250°F. Sizes 1" through 20"
TEFLON Lined Rubber Expansion Joint
Style E.S.NY
150 p.s.l. — 425°F. Sizes 1" through 20"
TEFLON Lined Neoprene Bellows
Style E.S.NM
100 p.s.l. — 150°F. Sizes 1" through 20"
TEFLON Lined Rubber Bellows
Style E.S.NMT
100 p.s.l. — 400°F. Sizes 1" through 20"



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DR. NORMAN A. SHEPARD

Chemical Director, Retired American Cyanamid Company

After six years of teaching in the chemistry department at Yale University, where he received his Ph.D. in 1913, Dr. Shepard joined Firestone Tire & Rubber Company in Akron in 1919 as Director of Organic Chemical and Chemical Research.

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In 1936, he organized the Stamford, Conn., research laboratory for American Cyanamid Company, with whom he served as Director of Technical Service until 1941, when he became Chemical Director until his retirement in May of this year.

Since 1942, Dr. Shepard has held many posts on Government commissions and boards in Washington, D.C., dealing with research and technical problems of the Armed Forces. Since his retirement, he has continued his Government service in both active memberships and on a consultant basis.

Dr. Shepard is the author of numerous scientific papers on organic chemistry, rubber development and research management.

THE CHEM SHOW

... twenty-five years of serving chemical processors

December 5th marks the opening of the 1955 Exposition of Chemical Industries in Philadelphia. On this 25th anniversary of the first of these shows it is perhaps timely to consider what these expositions have meant and will continue to mean to our industry . . . their contributions to the great strides made over the last 25 years . . . the part that they play in the enlightenment of those responsible for providing the facilities and materials necessary to our continued progress.

For the men of the field a visit to the show offers the best means of keeping abreast of our rapidly advancing technology. Such a visit not only posts one on the latest developments in equipment design, but also acquaints him with new raw materials, processes and applications.

To be sure, all or most of the items on exhibit may be seen at the showrooms or plants of the various manufacturers. However, where can so much ground be covered, with such economy of time, as at the exposition? And where, other than at the Chem Show, is it possible to compare competitive products so easily and so well?

The shows have become increasingly valuable and important as the industry has grown. The tremendous and rapid expansion of the war years, and, indeed, the growth over the last decade, has taxed the ingenuity and knowledge of the construction and chemical engineer. The Wall Street Journal, in a recent report, stated that business expenditures for plants and equipment in 1955 will exceed the 1954 figure by 4% and will be only 1% below that of the record year, 1953. These figures, of course, include not only the costs of building new capacity but also those of modernization.

To meet the keen competition, in many cases whetted

by over-capacity, obsolete methods and equipment must be promptly replaced. Survival may well depend on lower manufacturing costs and improved quality. Management and the engineer must find solutions to these problems — not tomorrow, but today or preferably day-before-yesterday. The Chemical Show is of vast help in keeping these people informed of new products and developments.

Such capital expenditures pay high dividends—especially when they conserve manpower. One of today's greatest problems is the shortage of trained technical people. The best immediate method of offsetting this shortage is the better utilization of those we already have . . . to provide them with better materials, equipment and facilities.

Important Developments

Just what you will see at the coming exposition, I have no way of knowing. The Chemical Show report in this issue will, I am sure, divulge many of the more important developments of interest to the field. I suspect that we shall see a great deal about titanium and its alloys and their various applications. There will, of course, be new plastic materials, and some old ones modified to give improved properties. Equipment for automation will undoubtedly be very much in evidence and will, perhaps, "steal the show." Maybe the solution to your own particular problem can be found. The exhibitors will have competent technical people on tap at their booths to give you advice and information.

You may come away from the show foot-sore and crowd-weary and with nary an idea of what you have learned. But in the back of your mind you may have the answer to the next knotty problem that you will face in your own plant.

Old Friends

And there is still another important and happy side (and a recompense, too) to these visits. These shows afford an opportunity to meet old friends from all over the country — an even better chance than society meetings give. The attendance is highly cosmopolitan and one can stop and chat at will without the interruption of scheduled sessions or papers. I, myself, find it hard to get through all the exhibits I want to see without being stopped frequently by my friends and acquaintances.

In closing it seems highly fitting, in this silver anniversary year, to pay tribute to the late Charles F. Roth. It is to his organizational and managerial genius that so much of the Show's success has been due. It was my privilege to have him as both neighbor and friend and to work with him as a member of his advisory committees over a considerable number of years. This year we have had to do without him but the project he started lives on.

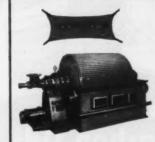
BIRD'S BIG SHOW

EQUIPMENT FOR SEPARATING SOLIDS FROM LIQUIDS



The BIRD CONTINUOUS CENTRIFUGAL FILTER—

a full scale operating unit set up so you can look inside and see how it works to give you thorough separation, high capacity, low operating and maintenance costs, continuously efficient and dependable operation— all without filter media, vacuum or auxiliaries.



The BIRD-YOUNG CONTINUOUS ROTARY VACUUM FILTER

with its ability to discharge very thin cakes with consequent high capacity; employing efficient multistage counter-current washing; and a design that permits the use of high vacuum at the filter media.



The BIRD PRESSURE FILTER, showing its exclu-

sive design features — improved, extra strong leaves — maximum sustained filter area — rapid opening and cleaning — removable components for ready adjustment to varying needs and the new self-sealing filtrate manifold that simplifies piping and puts all operating controls in one convenient place.



The NEW BIRD-PRAYON CONTINUOUS, ROTARY, HORIZONTAL VACUUM FILTER —

a working model that demonstrates how this pantype filter combines efficient, multi-stage, countercurrent washing of solids with high separating efficiency and low operating cost continuously without shutdowns for cleaning.



The NEW BIRD-HUMBOLDT SCREEN TYPE CENTRIFUGAL DRYER,

showing you how it combines high frequency oscillation and centrifugal force to deliver a continuous flow of well dewatered solids with low power consumption and long screen life.



The BIRD SUSPENDED CENTRIFUGAL with its famous Gyro-Balanced Suspension Head for smooth operation with out-of-balance loads, and the con-

operation with out-of-balance loads, and the construction features that have made it first choice for heavy duty, high capacity batch separation and clarification.



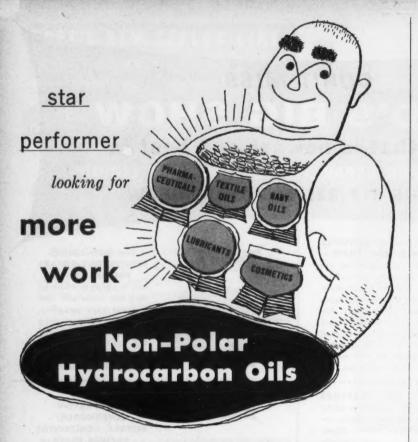
The BIRD RESEARCH and DEVELOPMENT CENTER,

taking you on a picture trip through this unique test and pilot plant which is devoted exclusively to the development of prompt, dependable findings on any solids-liquids separating problem.



South Walpole · Massachusetts

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PROPERTIES: Odorless • Colorless • Tasteless • Non-Reactive, Fluid at Low Temperatures (some as low as -30°F) • Relatively Low Cost • Viscosities between 38 and 360 S.S.U. at 100°F for Regular Grades • Molecular Weights between 160 and 400.

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Do you have any products in which Penn-Drake non-polar hydrocarbon oils might do a better job than materials you are now using? Our Technical Service will be glad to help you investigate the possibilities.

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what you can expect in next month's issue . . .

Two-way radio averts disaster



With your inter-plant telephone system knocked out could YOU direct fire-fighting activities and prevent total loss of your facilities? Standard Oil of Indiana, faced with precisely that situation, did successfully combat the fire stemming from the explosion at their Whiting (Ind.) refinery last August. In next month's Safety section you will find the story of how two-way radio helped Standard hold their losses down to 1% instead of the total destruction that might have resulted from communications breakdown.

Measuring flows of rocket fuels

You probably don't have flow-metering problems like Reaction Motors does at the company rocket engine proving grounds near Picatinney Arsenal . . . and be thankful you don't! Steady-state engine runs last less than one minute. Flowmeters must be accurate and stand up to liquid oxygen, fuming nitric acid, hydrazine — at temperatures as low as —297°F.

Associate Editor Bruce Fader visited John Redmond, Facilities Manager on the site, in late spring, picked up most of the facts then, later got the rest and all-important Government clearance for publication. Story, an Instrumentation section highlight in December, reveals how turbine-type flow meters turn the trick.

"Shock treatment" cuts paper coating costs

Last year, we published a story about a new type of dispersion mill that "shock-treats" by shooting jets of slurry against the edge of a circular-saw-like rotor whirling at 3600 rpm. This sounded like a development with possibilities to us (and to our readers, who showed strong interest), so we started developing an article showing, with facts and figures, how the mill performs under fire in a specific plant.

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Assistant Editor Ted Meinhold located such a story at Champion-International Company, Lawrence, Mass., where calcium carbonate pigment (for subsequent coating of paper) is being dispersed in the mill. Payoff is that company has cut coating adhesive requirements in half, because of the way the mill modifies pigment characteristics.

Thanks to the data supplying and checking of John Frankevicz, Technical Director of Champion-International, the story is a "New Solutions" feature in December.



Pail-full of protection against corrosion

The operator above is adding a rosin amine corrosion inhibitor to distillate cooling system of Socony-Mobil's East Chicago (Ind.) refinery. Before this practice was started, acid vapors from chlorides in the crudes were steadily gnawing at lines.

A "New Solutions" feature, developed through M. Juster, Socony-Mobil Senior Inspection Engineer, and written by Frank McElroy, CP Assistant Editor, reveals how inhibitor works, points out that it not only cuts corrosion but also removes scale so that heat transfer rates are maintained. Unlooked-for bonus: Still tower gets "residual protection" as some of the inhibitor is present in reflux.

Here's a quick preview of features you'll find in December's Chemical Processing

Alcohol recovery 95%, phenol 100%

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How an activated-carbon solvent recovery system is recovering 2400 gal of alcohol and a ton of phenol a day is told in a December "New Solutions" highlight. St. Regis Paper Company (Kalamazoo) reports that this represents 95% alcohol recovery and practically 100% phenol recovery. Procedure prevents air pollution besides returning the previously wasted chemicals to the process for re-use.



Story, written from data supplied by W. F. Stewart of St. Regis, points out that system treats 20,000 cfm of solvent-rich air being vented from process where phenol-formaldehyde resin is being cut for lamination of paper, other materials.

Corrosive organics tumble-dried

By switching to a glassed-steel conical dryer-blender, Eastman Kodak Company has cut by 75% the time needed to dry batches of a corrosive organic halide in Rochester (N.Y.). Unit's tumbling action keeps exposing new surface areas from which evaporation can take place.

Assistant Editor Ted Meinhold visited Kodak, found that there were other important benefits: assurance of high product purity, no corrosion problems, less clean-up losses and labor because of practically nil adherence of product to the glass interior. The "Processing Equipment" opening feature next month provides the details of this installation for "tumble-drying" chemicals.



H no corner cutting is what you'll find in Allis-Chalmers double-suction pumps. Extra metal thicknesses, extra strong parts, extra features and extra careful workmanship add up to long life, low maintenance, and low cost per gallon pumped.

Every Allis-Chalmers double-suction pump is carefully tested on the most modern testing equipment in the industry. Each installation is individually engineered by men whose experience in thousands of pump installations will give exactly the right pump for your needs. Stock sizes from 10 to 7000 gpm with heads to 475 feet.

seal if required.

Complete Pumping Unit

Allis-Chalmers can furnish the complete installation — pump, motor, control and drive — all built of coordinated design and manufacture.

Whatever your pumping problem, call your A-C Authorized Distributor or District Office. Or write Allis-Chalmers, Milwaukee 1, Wisconsin, for Bulletin 08B6146.

ALLIS-CHALMERS

ice — iron, bronze, stainless steel

When inquiring check CP 1715 opposite last page

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Eyes of the chemical processor will be focused on new ideas, techniques, equipment, materials at the 25th Exposition of Chemical Industries in Philadelphia, December 5th through 9th.

To help you plan your "tour" through the Commercial Museum and Convention Hall well ahead of time—to tell you "who's showing what"—here's your . . .

CHEM SHOW PREVIEW

A. P. V. COMPANY, INC. Buffalo, New York

Walker-Wallace Division will exhibit the APV paraflow plate heat exchangers. Units are especially suited for liquid-to-liquid heat transfer applications where small floor space is available.

ACE GLASS INCORPORATED Vineland, New Jersey

Line will include regulators, filters, drain traps and other units for laboratory air lines.

HAROLD P. ACKERMAN Philadelphia, Pennsylvania

This manufacturer's representative will have products of The Okadee Company and The Toledo Porcelain Enamel Products Company in his exhibit.

R. P. ADAMS COMPANY, INC. Buffalo, New York

Will exhibit chemical filter, aftercooler, air filter, cyclone separator, and porous-stone gas filters.

AIRETOOL MANUFACTURING COMPANY Springfield, Ohio

Will exhibit water-driven, ball-bearing tube cleaner motor, condenser cleaner, internal tube cutter, pushtype tube cutter, and tube expansion control system.

ALLEGHENY LUDLUM STEEL CORPORATION Pittsburgh, Pennsylvania

New stainless steel, AM 350 designed for use in chemical valves, hose clamps, flat and compression spring applications, in corrosive atmospheres. Also exhibited will be stainless steels from the 200 series, chromium-nickel-manganese alloys.

THE ALLEN-SHERMAN-HOFF PUMP COMPANY Wynnewood, Pennsylvania

Pump that requires no gland seal water. Used for pumping abrasive or corrosive fluid-solid mixtures.

ALLIS-CHALMERS MANUFACTURING COMPANY -Milwaukee, Wisconsin

Exhibiting a crawler tractor, lift trucks and diesel power unit, pumps, switchgear, motors, and V-belt drives.

Buda Division (Harvey, Ill.) will exhibit safety diesel industrial trucks and attachments.

ALLOY STEEL PRODUCTS COMPANY, INC. New York, New York

Corrosion-resistant valves made from a variety of stainless steels and special metals.

ALPHA PLASTICS INC.

West Orange, New Jersey

Rigid polyvinyl chloride pipe and fittings in ½ through 4" size, for handling corrosives.

ALSOP ENGINEERING CORPORATION Milidale, Connecticut

Cartridge filters, stainless steel open mixing tanks with mixers, stainless steel closed storage tanks, portable stainless steel disc filter mounted with pump.

AMERICAN GAS FURNACE COMPANY Elizabeth, New Jersey

Special burners (air-gas and oxygen-gas) for lab use. Redesigned natural gas burner, kilns and furnaces, and accessories like gas flow meters will be shown.

AMERICAN MACHINE AND METALS, INC. East Moline, Illinois

Niagara Filters Division will display horizontal plate filter, vibrator cake discharge, and "H" style filter with scavenger leaf design.

Tolhurst Centrifugals Division will exhibit bottom unloading center-slung extractor and the Maxi-Flex continuous extractor.

THE AMERICAN WELL WORKS

Aurora, Illinois

Homomix continuous mixer. Unit can be installed in vertical, horizontal or inclined position, in any pipe line. Eliminates need for mixing tanks.

ANALYTICAL MEASUREMENTS, INC.

Chatham, New Jersey

Miniature pH meter will be exhibited. (Continued on page 188)

American Management Association Photo







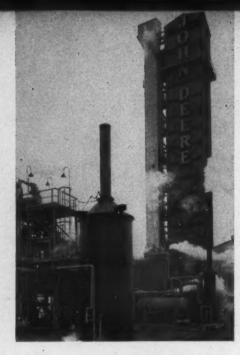


Fig I—Urea prill tower (right) pierces skyline at Pryor, Oklahoma, plant

Compact setup, taking only
70 x 58 ft floor space in
John Deere's Pryor, Okla., Plant

cools...
coats...
conveys...

26,400 lb/hr of urea prills

By FRANK E. McELROY, Assistant Editor with W. W. YEANDLE, Works Mgr. Grand River Chemical Div. Deere & Co., Pryor, Oklahoma

An efficient method for cooling, clay-coating, and storing prilled urea before weighing and packaging was required in the proposed plant of the Grand River Chemical Division of Deere & Co., in Pryor, Oklahoma. The setup was to be as compact as possible, and have an output of 26,400 pounds of urea per hr.

When the plant was in design stages two years ago, the engineering firm for the project specified conveying, cooling, coating, and storage equipment that would occupy a floor space approximately 70 x 58 feet. Here's how 550,000 pounds per day of urea is processed in this compact area.

Urea of 12 to 20 mesh (1/16" diameter) comes from the prill tower (Fig 1) at 170-190°F. It is collected on an enclosed rubber belt trough conveyor that can be rolled away for tower cleanout. This feeds a cross belt that conveys the urea to a six-foot ID x 40-foot air-swept rotary cooler. Lifting flights with cupped lips pick up the material and shower it through the cooling air. Air rate is 400 fpm, and prill temperature is dropped to 125°F.

Prills are screened and then dropped to an inclined belt conveyor which feeds a proportioning weigh belt "Conveyflo-Meter." This unit proportions oiltreated clay (<100 mesh) from a small batch bin which is added to the prills on the next belt by means of an Omega gravimetric scale and feeder, controlled by the "Conveyflo-Meter." About 3% (by wt) is added.

Belt carries the mixture to a six-foot x 30-foot rotary blender (Fig 2). Clay and prills are intimately blended. Clay coating imparts non-sticking or noncaking properties to the urea.

An inclined belt conveyor lifts the blend to a loading hopper of a fully automatic skip hoist (Fig 3). This lifts approximately 1200 lb in each load up to the finished product bin.

From bin, the clay-coated urea prills are weighed and bagged for shipment by means of a three-way surge hopper, an International bag packer, and three Thayer bagging scales (Fig 4).

(Material handling and rotary cooling and blending equipment is manufactured by The C. O. Bartlett & Snow Co., Dept. CP, 6200 Harvard Ave., Cleveland 5, Ohio . . . or for more information check CP 1716 on form opposite last page.)

(Design and project engineers were Foster Wheeler Corp., Dept. CP, 165 Broadway, New York 6, N.Y. . . . or for more information check CP 1716A on form opposite last page.)





Fig 3-Skip hoist (right rear) lifts urea-clay blend to bin

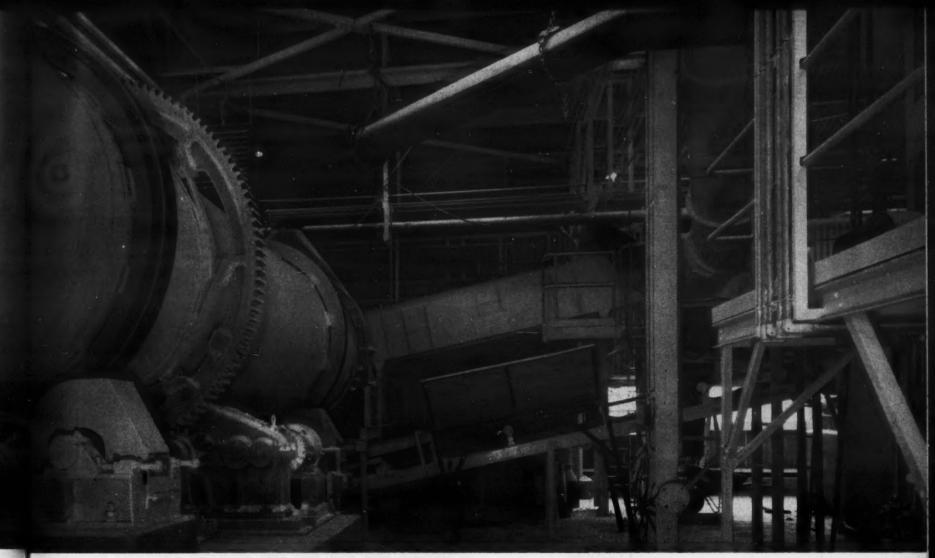
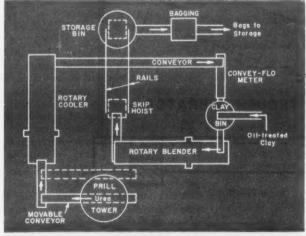


Fig 2—Urea prills are uniformly coated with clay in six-foot diameter by 30-foot long rotary blender

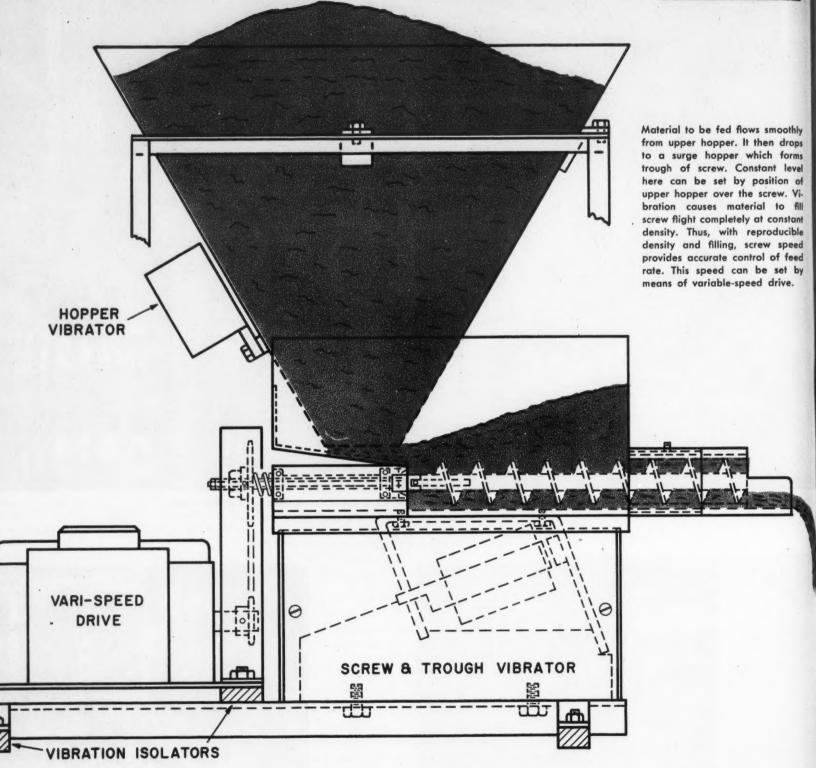


Ground plan of setup



Fig 4—Product is weighed and bagged for shipment

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smoothly en drops th forms ant level sition of crew. Vito fill constant oducible v speed of feed

set by drive.

Johns-Manville Research Center is using a highly accurate volumetric feeder for bulky, low-density powders with strong bridging and packing tendencies. Their feeding system has worked so well that J-M has been able to . . .

meter dry material as accurately as liquid

By CP Staff

with G. R. BELL, Senior Research Chemist Celite Application Research Section Johns-Manville Company



Diatomaceous earth is seen at top of hopper. Feed rates of 25 grams per minute are maintained

Diatomaceous silica filter aids move through controlled feeding system consisting of dry volumetric feeder, flooded funnel, centrifugal pump and eductor

PROBLEM: Diatomaceous filter aids are usually fed as slurries because of difficulty in handling small quantities of dry powder accurately. Bulky and low in density, these materials have strong bridging and packing tendencies. Effective action of the filter aid depends on its delicate structure and since this structure must be maintained, feeding system must have a gentle, non-degrading action.

With feed rates of only 25 to 500 grams of filter aid per minute, Johns-Manville engineers were stumped to find a dry gravimetric feeder that would provide the accuracy they needed. Slurry systems seemed to involve larger equipment than could be justified for such an installation. Vol-

umetric dry feeders did not look like a good bet in view of the tendency to bridge. While compressed air could be used to combat bridging, it would add a dust problem.

Purpose of the installation, in addition to supplying additional filter capacity, is to evaluate economics of the use of filter aids for water filtration. This places a premium on the accuracy and dependability of the feeder.

Solution: A recently developed volumetric feeder was installed in place of the slurry system. This feeder supplies a predetermined amount of filter aid continuously to the feed to the three diatomite filters in parallel which produce up to 1 million gallons per day of clarified water.

Depending on conditions of the river water supply and various other factors, one of the three different grades of filter aid is fed continuously while filters are in operation. Feed rates may range from 25 to 500 grams per minute depending upon the quality of the water supply. Though a single grade may vary as much as $\pm 5\%$ in density, this volumetric feeder without correction for these variations has an output with substantially less than this variation.

Even though one grade may tend to bridge and another to flood, each is fed equally well but differences in density may require different machine settings for each grade. The corrected output, regardless of grade or material, is less than $\pm 1\%$ and probably less than $\pm 0.5\%$.

The feeder employs density control along with volumetric metering, and uses vibratory flow to insure complete filling and emptying of measuring elements. There is no air entrapment to render volume measurement inaccurate.

Measuring element is a screw that provides continuous volumetric measure. In each cycle vibration completely fills it with material of standardized density, tending to even out minor variations in material density in supply hopper. Screw is completely emptied to provide an unvarying volumetric measure for each cycle.

Driven by a fractional-hp motor, through an infinitely variable planetary transmission, speed and feed adjustments are made by micrometric motion, dial-calibrated to 400 divisions.

Results: Since installation of the feeder there has been no problem of material bridging in hoppers. Set feed rates have been maintained without difficulty and with a high degree of accuracy.

(Vibra Screw Feeder is a product of Vibra Screw Co., Dept. CP, P. O. Box 25, Glen Ridge, N. J. . . . or check CP 1717 opposite last page.)



Dr. Thatcher testing a sample of magnetic tape with X-ray unit

FOR THE FIRST TIME, color television originating in New York and recorded on tape by RCA, was shown at the recent dedication of Minnesota Mining's new research center at St. Paul. No small part in this spectacular development was played by the magnetic tape, which must catch frequencies as high as eight million cycles per second, compared to four million for black and white TV and 20,000 for a good sound recorder

X-ray diffraction helps maintain quality of magnetic tape

Active ingredient in tape, gamma Fe_2O_3 is controlled by analyzer, which also performs a wide variety of other useful functions at 3M such as patent policing, solving plant problems, and development of new chemicals

By GORDON WEYERMULLER, Associate Editor with DR. WALTER E. THATCHER, Chemist Central Research Department Minnesota Mining & Manufacturing Company St. Paul, Minnesota

D EVELOPMENT and maintenance of the extreme sensitivity necessary for magnetic tape used in television recording has been aided by X-ray diffraction equipment in use at 3M's new research laboratory. Key role played by tape in TV was demonstrated recently when — for the first time — color television originating in New York City and recorded on tape by RCA, was shown in a 15-min program at the dedication of Minnesota Mining's new research center at St. Paul.

Tape must be tough, yet can only be a thousandth of an inch in thickness. When used for color television, the tape must catch frequencies as high as eight million cycles per second, compared to four million for black and white TV and 20,000 for a good sound recorder. Tests run on the X-ray diffraction unit help to maintain this extreme sensitivity by controlling the active ingredient in the tape, gamma Fe₂O₃. Inactive alpha Fe₂O₃ is kept to a minimum.

Accompanying chart shows an X-ray diffraction pattern formed from a sample containing no alpha Fe₂O₃, compared with one in which 10% of the inactive ingredient was present. As shown, the height of the peak on the chart is a measure of the concentration of a given compound. Scale of chart is logarithmic, making it possible to record the patterns of many compounds on one sheet.

X-ray unit in use at 3M also performs a variety of other important functions such as patent policing, solving plant problems, development of new chemicals, and other research work. Principal advantage analyzer has over other methods is that it can determine the chemical compounds that are present in a substance and not just the elements themselves. This is done by investigation of the crystal structure of a material.

Unit can be quite accurate when used for quantitative analysis. For instance, the difference between 8.02 and 8.04% of a compound in a sample can be measured. In general, an accuracy of $\pm 5\%$ of the actual amount of a compound present can be depended

upon. Unit also serves a useful function in qualitative analysis for product identification. Speed of analysis can be shown by the fact that it takes five minutes to test a sample of magnetic tape while the same test would take two days by conventional chemical methods.

X-ray unit can analyze materials by one of four general methods, which follow:

- 1-X-ray diffraction
- 2-X-ray fluorescence
- 3-Small angle scattering
- 4-X-ray absorption

First method is the one used for the tape. An example showing use of second method is the analysis of impurities in aluminum sheeting. Particle size of pigments is measured by third procedure. Fourth method can be employed when sample is in the form of a liquid rather than a solid.

In addition to the direct reading on the chart already described, instrument can also record reading on film. In the latter case, the darkness of the line is a measure of the percentage of a given compound. A sample as small as five micrograms can be analyzed although about five milligrams is the usual size. If sample is quite small, reading cannot be made on the film. One example of how the X-ray unit is used in patent work occurred when the company was able to successfully prosecute a patent suit concerned with their Scotch-Lite reflective sheet. X-ray analyses enabled

company to prove that the other party was using the same sheeting as was covered in the 3M patent.

Other cases of this type have occurred. In the same way, unit is used for patent policing. In the fluorochemical program, X-ray machine is used to establish the identification and characterization of new compounds for patent purposes.

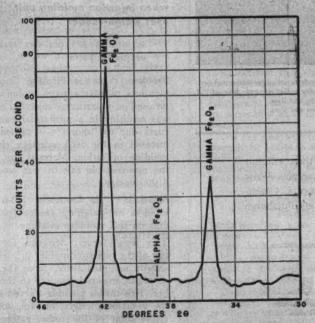
Instrument has also been used to help solve production and quality control problems that arise in the plant. It is used frequently to identify a variety of compounds, such as the amount of free quartz in rocks. Another application of unit is to determine if barium titanate ceramics have the particular crystal structure desired.

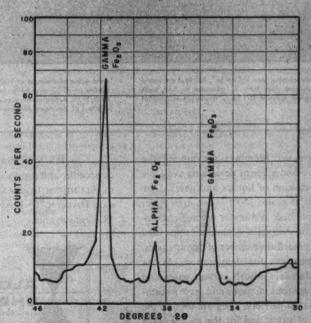
Company has used analyzer to study the particle size of oxide pigments, such as their permanent maroon pigment. Unit has proved to be very valuable in polymer chemistry studies. Degree of crystallization and the orientation of stretched and unstretched polymers can be measured.

When used as a fluorescence spectrometer, unit directs X-rays on sample, causing certain elements to fluoresce their own X-rays. As mentioned previously, the trace elements in aluminum sheet are measured in this manner.

Another application of the X-ray unit at 3M has been to determine the amount of cobalt in refined nickel.

(Continued on next page)





X-ray diffraction patterns on magnetic tape. Absence of peak in center of left chart indicates 0% alpha Fe₂O₃ (100% gamma Fe₂O₃). Chart at right shows 10% alpha Fe₂O₃ present in another sample

NEED EXTREME DRYNESS?

ALCOA Activated Alumina dries to lower dew points than other commercial adsorbents

TYPICAL PROPERTIES OF DESICCANT GRADES ALCOA ACTIVATED ALUMINAS

CHEMICAL ANALYSIS, %	F-1	F-3	F-5	F-6	H-151
Av ₂ o ₁		e interest i projekte i protesticio	77	88	85
No ₂ O		0.80	0.70	0.76	2.0
Fe ₂ O ₃	0.12	0.12	0.10	0.11	0.15
SiO ₂			80.0	0.08	6.3
Loss on Ignition 1100°C (2012°F)	6.8	7.2	12.4	8.5	6.2
CoCl ₂			9.3		
CoCl ₂				2.0	
PHYSICAL PROPERTIES					
Form		Granulae	Granular	Granular	Ball
Surface Area, meters ² /g	210			200	350
Bulk Density, Packed, lb/ff			60	57	55
Bulk Density, Loose, Ib/ft ^a			.55	52	52
Specific Gravity					3.1-3.3
Dynamic Sorption*	13-15	11-13	18-23	13-15	-21-23
Crushing Strongth†	55	55			-60
Pore Volume, ml./g	0.25	0.25		0.25	0.3
Pare Diameter, A		40		40 7 7	50
static Adsorption at 60%	13.0	11.0			20.0
Relative Humidity, %	(Min.)	[Man.]			(Min.)

The standard sizes for F grade alumina are $\frac{1}{2}$ " to $\frac{1}{4}$ ", $\frac{1}{4}$ " to 8 mesh and 8 to 14 mesh. Other nonstandard sizes from 2" granules to 325 mesh powder are available. Activated Alumina H-151 is available in nominal $\frac{1}{4}$ " and $\frac{1}{4}$ " diameter balls.

*Adsorption of moisture at 100% efficiency from air under isothermal conditions at 30°C and 84% relative humidity under dynamic flow of 7.5 cu ft/hr/lb Activated Alumina—Its Properties and Uses. †Method of Activated Alumina—Its Properties and Uses.

ALCOA® Activated Aluminas are among the most effective and efficient desiccants available for the dehydration of liquids and gases. Dew points as low as minus 100°F—and even lower—may be obtained, and under normal circumstances, ALCOA Activated Aluminas can be used for an almost indefinite number of drying cycles.

Besides their use for dehydration, ALCOA Activated Aluminas adsorb certain gases and vapors from gaseous mixtures and serve as catalysts and catalyst carriers. They are used in the liquefaction of gases, and for the maintenance of transformer and lubricating oils.

Let us tell you more about these efficient desiccants, and supply you with samples. Write to ALUMINUM COMPANY OF AMERICA, CHEMICALS DIVISION, 705-L Alcoa Building, Pittsburgh 19, Pennsylvania.



When inquiring check CP 1718 opposite last page

NEW SOLUTIONS of processing problems

X-RAY DIFFRACTION

(Continued from preceding page)

It has also been used for studying the fluorination of some products. Instrument has been extensively used to measure the properties of various abrasive materials, such as silicon carbide and aluminum oxides. One lot is compared with another. This helps to make certain that the best material is selected for abrasives.

Although other applications of the X-ray unit at 3M could be given, it may suffice to say that the work of the analyzer is a Dick Tracy type of operation in which secrets are continually being ferreted out. In general, it is used for analytical tests of a non-routine nature. The work of the machine is expanding at such a rate that the laboratory research men feel that they couldn't get along without it.

Although unit was placed in operation at 3M in 1950, it still looks like new. No mechanical troubles have occurred nor maintenance except occasional replacement of tubes.

(Model XRD-3 X-ray diffraction unit is a product of X-ray Dept., General Electric Co., Dept. CP, 4855 Electric Ave., Milwaukee 1, Wis. . . . or for more information reader may simply check CP 1719 on the convenient Reader Service slip which is located opposite last page.)

Production increased by 7 1/2 % when injection molding unit uses weigh-feeder . . .

savings of \$85 per day realized by molder of plastic parts

Problem: At Ger-Ell Mfg. Co., Chicago, manufacturers of plastic parts, volumetric feed method used on a particular injection molding machine was resulting in a substantial number of rejected parts due to "shorts" — caused by insufficient material in the feed injection chamber prior to molding operation. Material loss, represented by the non-reusable rejects, was amounting to over \$100 per day.

Solution: In December 1954, Ger-Ell substituted a net-weighing feeder for the volumetric unit on this molding machine.

This weigh-feeder, designed for installation on top of the injection molder in place of the hopper usually mounted there, feeds the precise amount of plastic material required to the injection chamber. This makes possible starved feeding, wherein the injection plunger, or ram, bottoms at the extreme limit of its stroke, rather than against a cushion of excess plastic.

On materials requiring a cushion, weigh-feeding maintains a cushion of constant dimension.

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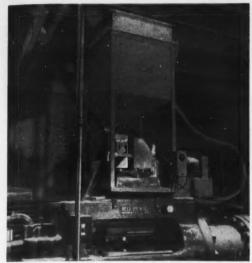
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Weigh-feeder, installed on top of molding machine, assures that exact amount of material is fed to injection chamber

Since installing the net-weighing feeder, machine's production has been increased 71/2% through elimination of rejects caused by "shorts". Total rejects have been reduced from 10 to 21/2%.

In addition to production increase, lower number of rejects means a big savings in material (costing 62c a pound) at the rate of at least \$85 per 24 hr, since this particular machine is operated 24 hr a day, six days a week. Moreover, savings would amount to \$125 a day if reject material had been a total loss; however, it was re-sold.

(Weigh Feeder is a product of The Exact Weight Scale Co., Dept. CP, 944 W. Fifth Ave., Columbus 8, Ohio . . . or for more information about manufacturer's product reader may simply check CP 1720 on form which is located opposite last page.)

Describes ultrasonic testing of adhesive bonds

An ultrasonic technique for non-destructive testing of adhesive bonds is described in 39-page report of Government-sponsored research. Three methods of evaluation were explored in the program conducted under Air Force contract. Mechanical impedance measurement technique offers the greatest potential usefulness and best correlation with results of destructive tests.

To obtain Report PB 111678, "Development of Non-destructive Tests for Structural Adhesive Bonds, Part 3, Mechanical Impedance Technique," April 1955, remit \$1.00 direct to Office of Technical Services, US Department of Commerce, Washington 25, D. C.



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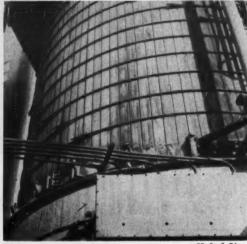
When inquiring check CP 1721 opposite last page

NEW SOLUTIONS of processing problems

Olin Mathleson protects conduit, provides water-tight joints with polyethylene tape . . .

prevents corrosion and maintains accuracy of instruments in H₂SO₄ plant

Problem: Coatings on electrical conduit lines at Olin Mathieson Chemical Corp., Pasadena, Texas, did not stand up very well. Plant at this location manufactures sulfuric acid. Water vapor was principal factor causing deterioration of the coatings.



CP Staff Photo

Conduit going to scrubbing tower, carrying leads for pH control, is protected with polyethylene tape

Solution: In October 1953 a number of the electrical conduit lines used for instrumentation were wrapped with polyethylene tape. Also, a 2" diameter, 1200' long natural gas line entering plant underground was wrapped in this manner.

Results: Polyethylene tape has protected the conduit and given air-tight and water-tight joints. It has prevented corrosion and helped to maintain the accuracy of the instruments.

(Polyethylene protective tape coating is a product of Polyken Products Dept. of The Kendall Co., Dept. CP, 222 W. Adams St., Chicago 6, Ill. . . . or for more information check CP 1722 on form opposite last page.)

This month's Processing and Engineering

Data section starts on page 224



IT PAYS TO LOOK AT THE ADVANTAGES OF USING B&W SEAMLESS WELDING FITTINGS

Welded Construction Assures Minimum Pressure Loss — True circularity and radii, and smooth inner walls reduce friction and turbulence.

Welded Construction is Simple to install—Dimensional accuracy of angles, radii, and bevels, assures quick and easy joining. Welded Construction is Permanent — Maintenance costs are kept at a minimum because piping is permanently leakproof.

Welded Construction Takes Less Space — Piping can be nested in corners, or fitted against ceilings, walls or equipment. Whole Sections Can Be Shop-Fabricated — Ease of fabrication permits entire sections to be shop-fabricated and installed in a few minutes.

Welded Construction is Lightweight
— Strength combined with lightness-in-weight permits easy handling.

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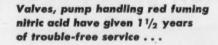
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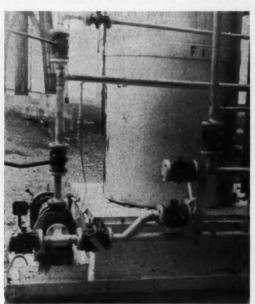


at one of Hercules Powder Company's plants

Problem: One of the units at a Hercules Powder Company plant handles red fuming nitric acid containing high percentages of oxides. Problem was to find pumps, valves, and materials of construction that would withstand this severe service.

Solution: For pumping the acid, a D3RD Durcopump was specified. This pump has wet end parts made of Duriron. Frame and clamping ring are made of aluminum. Pump is packed with Garlock No. 5880 Teflon-impregnated asbestos, a rated capacity of 50 gpm against a 58-foot head. Pump is powered by a 3-hp motor at 1750 rpm.

Valves are Durco Type F non-lubricated plug valves made of Durimet 20 with all stainless trim. Body and plug are separated by a reinforced Teflon



Centrifugal pump, valves at Hercules Powder Co.

sleeve to prevent galling and sticking. Bottom of plug is sealed by a Teflon diaphragm, held in place by bottom cap. Design pressure is 150 psi with maximum temperature of 400°F. Unit has a total of 19 valves, ranging from $\frac{1}{2}$ to 2 inches.

Construction material for the piping, tank, and supporting structures of the unit is aluminum.

Results: Valves and pump have given over $1\frac{1}{2}$ years of trouble-free service, and provided the answer to this flow control problem, made particularly difficult by the corrosive being handled.

(Durcopump and valves are products of The Duriron Co., Inc., Dept. CP, Dayton 1, Ohio . . . or check CP 1724 on form opposite last page.)



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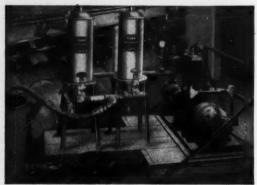
LOS ANGELES 17, CAL. . MILWAUKEE 46, WIS. . NEW YORK 16, N. Y. . PHILADELPHIA 2, PA. . ST. LOUIS 8, MO. . SAN FRANCISCO 3, CAL. . SYRACUSE 2, N. Y. . TULSA 3, OKLA.

When inquiring check CP 1723 opposite last page

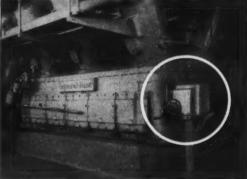
See how Cuno handles any filtration problem



10,000 gallons of water per minute are filtered by six of these Cuno Flo-Klean filters, used to remove sand and gravel from incoming well water at pharmaceutical plant. Plant records show that the FLO-KLEANS, by protecting valves and pumps from wear caused by sand, are responsible for saving up to \$2000 per month in maintenance costs.



Paints and enamels. This Cuno MICRO-KLEAN installation filters enamel being pumped from storage tanks to shipping containers. This micronic media provides finer filtration at lower costs for chemicals, oils, gases, water and many other liquids. Records show that the MICRO-KLEAN element lasts twice as long as ordinary cartridges.



Lubricating oil for modern 600 hp gas compressor is thoroughly strained by four Cuno AUTO-KLEAN filters. The continuously cleanable all-metal Auto-KLEANS are specified as standard equipment by leading manufacturers of Diesel engines, compressors, pumps, machine tools and other heavyduty machinery.



Screens. Cuno makes a complete line of both electrolytically formed and woven screen strainers designed to be built into your product. The electrolytically formed screens are available in nickel; the woven screens of steel, brass, copper, stainless and other alloys are provided in all standard variations of weave.

· We're really proud of our growing list of satisfied customers, like Buda, Bullard, Consolidated Paper, Du Pont, Ingersoll-Rand, Pratt & Whitney, Sherwin-Williams and others who use Cuno filters for anything from acids to tar. They know that if it can be pumped, Cuno can filter it.

We'd like to know about your filtration problem, too. Write for free analysis questionnaire. Cuno Engineering Corporation, Dept. 1634, Meriden, Conn. NEW SOLUTIONS of processing problems

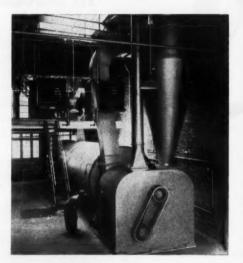
Drying eliminates spoilage of wet brewers grain . . .

rotary dryer features 3 passes in one drum

Perishability has long been a major problem faced by brewers in disposing of spent grains. These grains, which are used as livestock feed, are impractical to transport in wet state outside brewer's immediate area, and cannot be stored very long. Feeding of wet grains to dairy cattle is often prohibited for sanitary reasons and because milk flavor may be adversely affected.

To avoid these and other disadvantages connected with wet grain handling, the Miller Brewery in Milwaukee converts it into a valuable by-product through dehydration. Dried grains, an excellent feed, are easily packaged and stored, can be transported great distances without spoilage, and don't affect milk flavor.

Miller uses 4 direct-fired "flash" dehydrators of the rotary, 3-pass type. Two dryers recently installed show production of 4300 lb dry grain per machine per hour. Each dryer has two presses running in conjunction with it. Two older dryers have only



Dryer in brewery delivers 4300 lb per hour livestock feed from spent grain

one press each, limiting their production to about 3000 lb per hour per machine.

Each dryer drum consists of three concentric cylinders, all revolving in same direction at same speed. Wet material enters center cylinder and is carried away from heat source in air stream generated at discharge end. As they travel through hot gases and give up moisture, grains become increasingly lighter and progress forward to end of center cylinder, back through intermediate, and forward again through outer cylinder. Concentrate is then aerated and finally bagged for storage, transportation, and



When inquiring check CP 1725 opposite last page

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sale. Grain is reduced in moisture content from about 70% to only 8.8%. Fuel oil consumption is about 70 gallons per hour per dryer.

(Dryer described is manufactured by The Heil Co. and sold by the Arnold Dryer Co., Dept. CP, 3000 W. Montana St., Milwaukee 1, Wis. . . . or for more information check CP 1726 on form opposite last page.)

Fills polyethylene bottles fast, eliminates former problem of "collapsing" . . .

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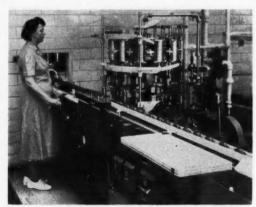
of

ly

pressure-vacuum unit fills spray deodorant at rate of 128 bottles/min

Problem: When The Mennen Company, Morristown, N. J., brought out their spray deodorant in "squeeze" bottles in January 1951, they found that the filling of polyethylene bottles posed many problems not encountered in filling glass containers. Not only was the lightweight plastic bottle difficult to handle on conveyors and feeds, but the flexibility of the container wall also made conventional filling techniques virtually impossible.

Use of vacuum was desirable to develop a higher filling speed for a low-viscosity product like the deodorant. Vacuum evacuates air from the container and accelerates flow of product. However, the

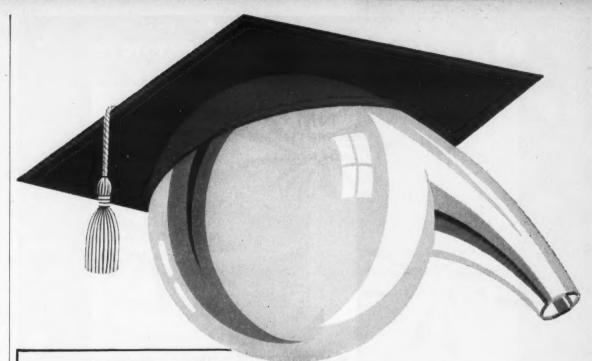


Vacuum-pressure unit combines speed and cleanliness in filling plastic "squeeze" bottles at The Mennen Company, Morristown, N. J.

non-circular bottle used by Mennen will withstand minimum vacuum. Sustained vacuum or vacuum of high amount for even minimum periods will collapse or so deform the package as to make filling impossible.

Solution: In 1953, Mennen installed a filling machine which utilizes both vaccum and pressure during the filling cycle. Bottles are initially sub-

(Continued on next page)



REPORT CARD

Pharmaceuticals	IA	Pressure Transfer	TA
Dyes	A	Fumigant Carrier	A
Paint	A	Capsulating	A
Lacquer	A	Explosives	A
Packaging	A	Powdering	A
Purging Tanks and Mains	A	Flushing Molten Metals	A
		efrigerant for	
Pharmaceuticals	A	Resins	A
Dves	- A	Rubber Trimming	A

Pharmaceuticals	A	Resins	A
Dyes	· A	Rubber Trimming	A
Paint	A	Vacuum Traps	A
Plastics	A	Low Temperature Testing	A
Lacquer	A	Explosives	A
Insecticides	A	Lyophilizing	A

CO ₂ as an Active Ingredient for			
Pharmaceuticals	A	Foam Plastic	A
Tin Plate Testing	A	Foam Rubber	A
Asbestos Cement Cure	A	Water Treatment	A
Carbonation	A	Manufacture of	Α
PH Control	A	Carbonates	^

 CO_2

...POST-GRADUATE

CO₂ is an old "wonder chemical" — though not too old to learn . . . to expand its knowledge and usefulness. Today, the chemical and process industries are putting CO₂ to work in ways that were unheard of a few years ago. Here is a report card showing where CO₂ has been getting straight A's. We would be glad to discuss related applications in your processing methods and to place our wide experience at your disposal.



AT THE FRONTIERS OF PROGRESS YOU'LL FIND



Nation-wide "Dry-Ice" Service-Distributing Stations in Principal Cities
GENERAL OFFICES: 60 EAST 42ND STREET, NEW YORK 17, NEW YORK

PURE CARBONIC COMPANY is a division of AIR REDUCTION COMPANY, INCORPORATED Principal products of other divisions include: AIRCO—industrial gases, welding and cutting equipment and acetylenic chemicals OHIO—medical gases and hospital equipment NATIONAL CARBIDE—pipeline acetylene and calcium carbide COLTON CHEMICAL COMPANY—polyvinyl acetates, alcohols and other synthetic resins.

When inquiring check CP 1727 opposite last page



As solvents, the NP's present an unusual combination of properties. They are medium-boiling, mild-odored, and have strong solvent power for a wide variety of substances, including many coating materials, waxes, resins, gums, dyes and numerous organic chemicals. They have thoroughly demonstrated their usefulness in the formulation of nitrocellulose, cellulose acetate, cellulose triacetate and cellulose acetate butyrate lacquers and adhesives. They have also found use in specialty products based on various vinyl-type resins.

CSC's new Nitroparaffin plant at Sterlington, La. is now in full production. Additional facilities for increased volume of NP derivatives are nearing completion.

8-PAGE TECHNICAL DATA SHEET AVAILABLE

Get your copy for full details, specifications, properties, uses, solubility tables, chemical reactions, and handling and storage. CSC's Market Development team is ready to work with you in applying these versatile chemicals to your products or processes. Samples of the four basic NP's and their derivatives available on request.

THE NITROPARAFFIN DERIVATIVES

ALKATERGES

AB (2-Amino-1-butanol)
AEPD (2-Amino-2-ethyl-1, 3-propanediol)
AMPD (2-Amino-2-methyl-1, 3-propanediol)
AMP (2-Amino-2-methyl-1-propanol)
NB (2-Nitro-1-butanol)
NEPD (2-Nitro-2-ethyl-1, 3-propanediol)
NMPD (2-Nitro-2-methyl-1, 3-propanediol)
NMP (2-Nitro-2-methyl-1-propanol)
TRIS AMINO (Tris [hydroxymethyl]
aminomethane)

TRIS NITRO (Tris [hydroxymethyl] nitromethane)

HAS (Hydroxylammonium Acid Sulfate)
HC (Hydroxylammonium Chloride)
HS (Hydroxylammonium Sulfate)



COMMERCIAL SOLVENTS

260 MADISON AVENUE CORPORATION NEW YORK 16, N. Y.

When inquiring check CP 1728 opposite last page

NEW SOLUTIONS of processing problems

(Continued from preceding page)

jected to a short vacuum cycle, at the end of which the liquid is delivered through the nozzle under pressure into the bottle. Any slight deformation of the bottle is re-formed by liquid under pressure in the filling cycle. Vacuum-pressure arrangement fills to a constant level, overflow being drawn to jar by means of vacuum at end of filling cycle.

Results: Pressure-vacuum machine is filling polyethylene bottles wih substantially the same efficiency, speed, and cleanliness as the vacuum-type units give on glass bottles. There is no problem of "collapsing" containers during filling. Filling speeds obtained are: 128 bottles per minute with the 1½-oz size, 115 per minute with the 3-oz size.

(Pressure-vacuum filling machine is a product of The Karl Kiefer Machine Company, Dept. CP, 920 Martin St., Cincinnati 2, Ohio . . . or for more information check CP 1729 on form which is located opposite last page.)

G. D. Searle avoids direct drafts, gets frequent air changes with diffuser . . .

unit provides uniform temperature control with negligible maintenance

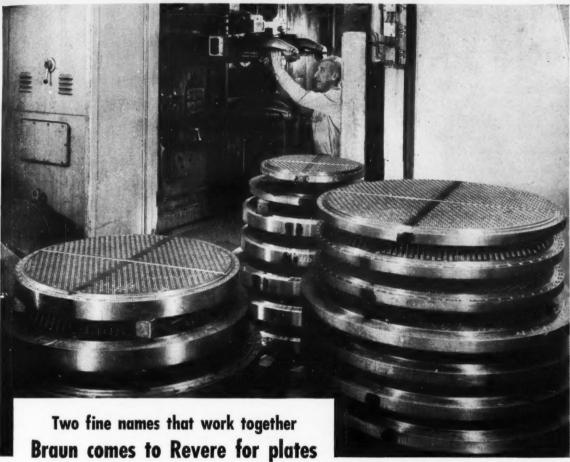


Packaging area at G. D. Searle serviced by draftless air diffuser

Problem: Circular louvred overhead air diffusers, in processing area of G. D. Searle and Co., pharmaceutical laboratories, resulted in direct drafts on technicians and high velocity air movement in areas where powders and tablets were processed. This caused air suspension of powders, making working conditions less desirable and causing loss of valuable product.

Experimental animal room, containing 5000 live animals, required a temperature of 72°F plus or

(Continued on page 25)



Tube sheets at 4-spindle automatic drill in Braun shop.

C. F. Braun & Co., Alhambra, Calif. is well known in the petroleum industry, the chemical industry, and other businesses in which heat transfer and fractionation are vital. Revere Copper and Brass Incorporated is well known in the non-ferrous metal industry for its tube sheets and plates, in all the customary alloys. What is more natural than the close relations between the two companies, Revere the supplier, Braun the fabricator? Revere can furnish heavy plates when needed; Braun is one of the great heavy-duty shops of the country. So far as transportation limits permit, Braun fabricates in its own plant; their machines and their cranes can handle anything the railroads can haul away. The same is true of Revere, which is likewise known throughout heavy industry for its ability to produce not only large plates, but also condenser and heat exchanger tubes.

Revere is pleased to be an important supplier to Braun. Remember, good names find it good business to come together. The next time you want quotations on tube sheets and plates, and condenser tubes, get in touch with the nearest Revere Sales Office.

REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801 230 Park Avenue, New York 17, N. Y.

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N.Y. Sales Offices in Principal Cities, Distributors Everywhere. A Braun engineer inspects a drilled tube sheet.



When inquiring check CP 1730 opposite last page

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Carbon Steels

Carbon-Molybdenum Steels

Chromium-Molybdenum Steels

Nickel Steels

Chromium-Nickel Steels

Chromium-Silicon-Molybdenum

Wrought Iron

Chromium Type Stainless

Chromium-Nickel Stainless

Molybdenum Type Stainless

Wrought Aluminum

Aluminum-Copper Alloys



1/2 inch through 42 inches.

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FORGED CORROSION RESISTANT—LIGHT WEIGHT and A.S.A. FLANGE 1/2 inch through 24 inches.



FORGED SCREWED OR SOCKET WELDING FITTINGS and UNIONS

1/8 inch through 4 inches



LARGE DIAMETER AND T.E.M.A.* STANDARD FLANGES up to 20 feet O.D. up to 24 inches, 150 lb. through 2500 lb

*Tubular Exchanger Manufacturers Association

LONG WELDING NECKS

Complete Service ...



BUTT WELDING FITTINGS

Schedules 55, 105, 405, 805, and other Schedules and wall thickness.

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FORGED CORROSION RESISTANT—LIGHT WEIGHT and A.S.A. FLANGES
150 lb. through 2500 lb. pressure ratings.



FORGED SCREWED OR SOCKET WELDING FITTINGS and UNIONS 150 lb. Corrosion Resistant and 2000 lb. through 6000 lb. ratings.

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You get prompt, efficient service when you specify and order from the complete Ladish Controlled Quality line. Fittings in any forgeable material in virtually every type, size, wall thickness or pressure rating ... are produced to one uncompromising Controlled Quality standard ... and identified with heat code symbols pioneered by Ladish as verification of metallurgical integrity resulting from exhaustive tests made in the Ladish metallurgical laboratories.

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Why? Maybe, like many others, you've wondered why CHEMICAL PROCESSING comes to you without charge — while, perhaps, you pay a subscription price for other business magazines.

Maybe you've thought publishers make money when they sell you a \$3.00 or a \$5.00 subscription.

No—publishers lose money ... yes, most business magazines lose money when they sell a subscription—not only because the magazine costs more to produce than the subscription price brings in—but also because the cost of making such sales exceeds the income for \$3.00 or \$5.00 subscriptions.

Advertisers pay the bills—You see, it's the money that comes from advertising that keeps the business magazine publisher in business. So, logically, such advertisers demand best possible coverage of folks like you—the important key men who exercise buying power.

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For you simply can't get maximum coverage of these important folks by trying to sell subscriptions. These men, limited in numbers, are scattered all over the U.S.A.: travel and/or direct mail cost money; a large share "forget to renew" each year; and, no matter how much time, money and pressure you put on them, there are always some important men who will never buy.

CHEMICAL PROCESSING gets best circulation

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That's why Chemical Processing spends many thousands of dollars on each issue — to give you this valuable service costing more than \$40.00 per year, per reader. That's why Chemical Processing comes to you without charge—you are an important reader in the chemical field.

*Every issue proves this qualified readership...by unequalled response from these key readers. May we show you the evidence?



published by Putman Publishing Company



For more information on products advertised by the Ladish Co. on inside two pages specify CP 1731... see information request blank opposite last page.



also publishers of:
FOOD PROCESSING
FOOD BUSINESS
"Executive Magazines for Industry"

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(Continued from page 24)

minus 2°. Frequent air changes, to offset strong inherent odor, were necessary but strong drafts could completely change experimental results.

Solution: Air conditioned areas, totaling 150,000 sq ft, were fitted with a low velocity air diffuser. First unit was installed in 1946 and others



Top view of acoustical ceiling installation panel

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since that time. Diffuser employs a perforated ceiling panel to introduce air vertically, and at low velocity into a room or working area. Perforations reduce high velocity air in duct from 1000 to 1500 fpm to 40 to 50 fpm as it leaves panel. Units were installed in

processing areas, animal rooms, offices, and corridors.

Neither single panel adjustments, to suit individual occupants' requirements, nor reduction or increase of air capacity at source to meet seasonal demands, adversely affected desired air flow pattern. Air diffuser can be used with any air source system.

Results: Air suspension of powders in processing areas, caused by circular, high-velocity air diffusers, was eliminated. Direct drafts, on employees seated at desks or benches ceased. Working conditions were improved.

Temperature in experimental animal room is met with a differential of only one degree. Air is changed every ten minutes, using 30% fresh-air make up, with complete absence of strong air streams of blow. Odor problem was successfully handled.

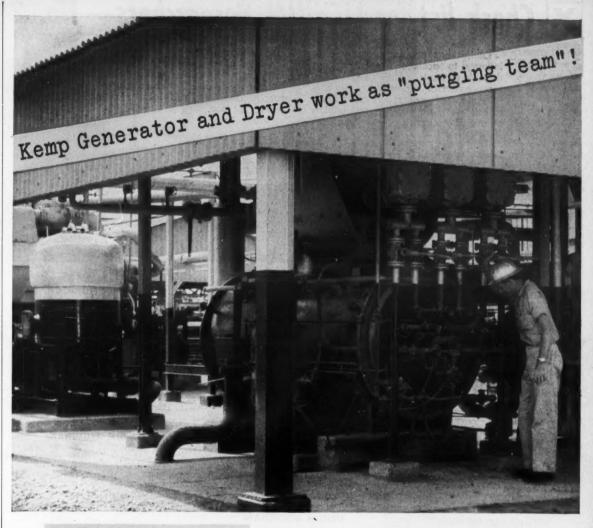
Diffusing of air vertically and at low velocity eliminates dirt impingement on walls and ceilings. Only maintenance required has been to wipe down metal panels twice a year.

(Multi-vent air diffusers installed at G. D. Searle are a product of Multi-vent Div., Pyle-National Co., Dept. CP, 1334 N. Kostner Ave., Chicago 51, Ill. . . . or check CP 1732 opposite last page.)

Heat transfer apparatus described in four-page bulletin

Oil heaters, coolers, strainers, evaporators, heat exchangers, pipes, and coils are covered in four-page bulletin. Cross-section views of typical units are shown, brief descriptions of products are given, and references to other bulletins are listed for more detailed engineering data.

Bul HT-1 is issued by Dept. HT-B, Schutte and Koerting Company, Dept. CP, Cornwells Heights, Bucks County, Pa. Specify CP 1733 on form which is located opposite last page.



Gulf Oil Reports: Pipe line purging problems solved by Kemp Gas Generator and Kemp Dryer

At Gulf Oil's Port Arthur, Texas refinery, dry inert gas is required in the Ethylene Plant for purging pipe lines, tanks and vessels.

Kemp Units selected to do the job

To insure a constant supply of gas—sufficiently dry and free of oil vapors—Gulf installed both a Kemp Inert Gas Generator and a Kemp Convection Type Dryer. The units work as a "purging team"...the Kemp Generator produces 30,000 SCFH of inert gas which is compressed and passed through a Kemp Pre-filter to remove all moisture prior to entering the gas receiver. The result is an efficient, easily controlled source of dry inert gas at all times.

Kemp can solve your problem too

Whether your needs involve dry gases, inert gases—or both, Kemp can help you to the most profitable solution. Kemp lnert Gas Generators automatically deliver clean, controlled atmospheres at specific analysis, without fluctuation—regardless of demands. A variety of Kemp Dryers are designed to dry air, gases or liquids to sub-zero dew points and are available with manual, semi-automatic or fully automatic tower reactivation. In addition, Kemp will specify the proper desiccant for the job.

For complete facts and technical information on Kemp Inert Gas Generators and Kemp Dryers, write today to: The C. M. Kemp Mfg. Co., 405 East Oliver St., Baltimore 2, Maryland.





IAMIC DRYERS INERT GAS GENERATORS

CARBURETORS • BURNERS • FIRE CHECKS
METAL MELTING UNITS • SINGEING EQUIPMENT

When inquiring check CP 1734 opposite last page

X

Check list for LITHIUM Researchers—No. 2

Lithium has enabled industry after industry to achieve over-all savings through shortcuts, reduction of waste, improvement of end-product, and simplification of operating procedures. Check your field of interest in Lithium below. If you are interested in a spe-

cific application relative to Lithium not indicated in the checklist, note the fact in the form furnished, attach it to your letterhead and send it to us. Our research laboratory will look into the matter for you.

LITHIUM COMPOUNDS

	LITHIUM CARBONATE	LITHIUM HYDROXIDE	LITHIUM CHLORIDE
	Uses:	Uses:	Uses:
	Porcelain enamels Pottery glazes Special glasses Pharmaceutical chemicals Lithium salts Heat treating salts	☐ Storage batteries ☐ Gas absorption ☐ Pharmaceutical chemicals ☐ Multi-purpose greases ☐ Lubricating oils ☐ Lithium salts	☐ Gas absorption ☐ Air conditioning ☐ Welding rods ☐ Brazing fluxes ☐ Lithium metal ☐ Heat treating salts ☐ Deicer fluid
	LITHIUM COBALTITE	LITHIUM BROMIDE	LITHIUM NITRATE
	Uses:	Uses:	Uses:
0	Porcelain enamels (ground coats and colored cover coats)	☐ Air Conditioning ☐ Pharmaceuticals ☐ Gas absorption	☐ Refrigeration☐ Heat treating salts
	LITHIUM MANGANITE	LITHIUM SILICATE	LITHIUM TITANATE
	Uses:	Uses:	Uses:
	Porcelain enamels (ground coats for kitchenware, refrigerators, stoves, etc., cover coats for colored ware) Semi-conductors	☐ Titanium porcelain enamels ☐ Glazes for sanitary ware ☐ Pottery glazes	 ☐ Titanium porcelain enamels ☐ Ceramic glazes ☐ Electric porcelains
	LITHIUM ZIRCONATE	LITHIUM ZIRCONIUM SILICATE	LITHIUM ALUMINATE
	Uses:	Uses:	Uses:
	Porcelain enamel ground coats Titanium porcelain enamel cover coats Ceramic glazes Electric porcelains	☐ Ceramic glazes ☐ Electric porcelains	☐ Flux in highly refractory enamels
	LITHIUM (META)BORATE	LITHIUM MOLYBDATE	_
	/Uses:	Uses:	
	As a flux in enamel cover coats	□ As smelter or mill addition in white enamel cover	
	I am interested in Lithium	(Compound, Metal or Derivative)	
	the following application:		

Technical Data Sheets are available for every compound in the checklist. They will be sent as checked above.

... trends ahead in industrial applications for Lithium



MINES: Keystone, Custer, Hill City, South Dakota • Bessemer City, North Carolina • Cat Lake, Manitoba • Amos Area, Quebec • BRANCH SALES OFFICES: New York
Pittsburgh • Chicage • CHEMICAL PLANTS: St. Louis Park, Minnesota • Bessemer City, North Carolina • RESEARCH LABORATORY: St. Louis Park, Minnesota

When inquiring check CP 1735 opposite last page

NEW SOLUTIONS of processing problems

Used H₂SO₄ salvaged economically from pickling process by simple acid reclaimer . . .

iron removed as sludge; acid is reused in process

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Thanks to some simple equipment, sulfuric acid used for pickling processes can be economically reclaimed and need no longer be considered a source of water pollution. The acid reclaimer consists of three tiered evaporating tables set in such a manner that the spent solution cascades from one to the other while it is heated by a gas burner underneath. A single operator can run the unit.

Acid solution can be drawn from the pickler and fed to the reclaimer at rates of about 1000 gph. Fresh concentrated sulfuric acid is added to it in order to maintain the solution strength within the desired limits. In addition, it is brought rapidly to the boiling point so that the iron precipitates out of the solution in the form of a sludge.

On leaving the acid reclaimer, the solution, with the iron sludge in suspension, travels through a trough to one of two settling tanks. Here the sludge collects in the bottom and the clear solution overflows to a receiving tank. From here it can be pumped back to the pickling tank to complete the process.

Settling tanks are used alternately. This permits continuous operation, since one can be emptied while the other is in use.

(Acid reclaimer was designed and built by Crown Cork and Seal Company, Dept. CP, Eastern Avenue and Kresson Street, Baltimore, Md. . . . or for more information reader may simply check CP 1736 on the convenient Reader Service slip which is located opposite last page.)

Screen clogging problem solved by electrolytically-formed perforated plate . . .

cleaning abrasives from screen wore them out in six weeks, plates last over a year

Problem: Woven wire screens on Conkey rotary hopper vacuum dewaterers lasted only about six weeks at Norton Company, Worchester, Massachusetts, before they had to be replaced. Used to remove excess water from washed aluminum oxide abrasives, the screens became clogged very easily and had to be scraped or beaten to loosen the caked grain. The cleaning process was hard on the screens, and wore them out quickly.

Solution: Engineers installed electrolyticallyformed perforated plate on the dewaterers. Made

(Continued on page 28)

Uranium yellow cake dried on twin-drum dryers . . .

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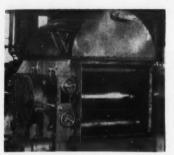
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material has moisture content reduced to 6%

Uranium yellow cake is successfully being dried on an atmospheric twin-drum dryer at The Anaconda Company's plant at Grants, New Mexico. The material, which is formed into a uranium concentrate slurry prior to being fed to the dryer, has its moisture content reduced to about six per cent.



Experimental dryer showed that uranium cake could be dried by atmospheric means

Before the dryer was installed, preliminary tests were conducted by engineers with a 6 x 8" laboratory model furnished by the manufacturer of the equipment. Results were so satisfactory that a larger (24 x 36") dryer was installed for additional tests. Latter could be used either as splash-feed or as pendulum-feed unit.

Results from the experimental work proved so encouraging that company purchased two 42 x 90" models for the large-scale production work

(Buflovak twin-drum dryers are product of Blaw-Knox Company, Dept. CP, Farmers Bank Building, Pittsburgh, Pa. . . . or for more information check CP 1737 on form which is located opposite last page.)

For more information on product at right, specify CP 1738
. . . see information request blank opposite last page.



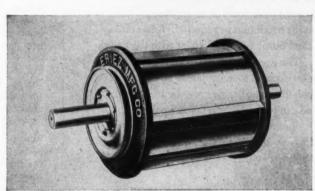


CONNECTED BY A MAGNETI The idea of an Eriez Magnet powerful enough to connect a locomotive to a freight car it is pulling, finds a practical aspect in industry. So powerful are Eriez Magnets that they can snatch deeply buried tramp iron out of material passing at high speeds on processing lines. The result is a prevention of fires, machinery damage and product contamination. All Eriez Magnets are non-electric, selfcontained. They operate without any wires or attachments. Best of all their magnetic power lasts a lifetime. The first cost is the last.

Magnetic ideas from ERIEZ



A POUND A DAY KEEPS THE REPAIRMAN AWAY. A 36" Eriez Plate Magnet at the Tetley Tea Company plant picks up about a pound a day of nails, bolts, screws and other tramp iron. The Eriez installation protects the bag machinery...and is saving about \$5,000 a year...and is saving about 200 man hours annually...and is increasing production! Besides the plate magnet shown, four other efficient Eriez Magnets have been in operation at the famous tea plant since 1950.



YOU CAN'T BEAT THIS DRUM. The Eriez Magnetic Drum is an unbeatable unit for extracting tramp iron from materials conveyed in spouts, chutes, spiral conveyors, etc. Consisting of units with or without housing, the Eriez Drum is a revolving shell inside of which are powerful Alnico V elements which pull tramp iron from wet or dry material thereby preventing fires, machinery damage and product contamination. Want more information on this product? . . . request Bulletin B-601.

Eriez' free booklet "Magnetic Ideas" can help you. Send for it without obligation. Address: Eriez Manufacturing Company, 73Y Magnet Drive, Erie, Pa. Or, on your specific request Eries' factory-trained field men backed by Eriez' laboratory and engineering know-how will be happy to study your particular problem, make a plant survey and offer helpful "Magnetic Ideas".



HORSE SENSE FOR HORSE-RADISH. Thor-Shackel Horse-Radish Co., Chicago, installed this sanitary Eriez Pipeline Trap just ahead of the pumps that move the product to the filling machines. The trap assures a product free from metal contamination and also increases production. Previously, any small bits of metal would jam the pump impellers. This would mean a delay of up to an hour and the loss of horse-radish removed from the vat to allow the fans to be cleared. The Eriez Pipeline Trap has eliminated all pump failures caused by tramp iron mixed with the horse-radish.



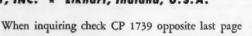
for Flooded Suction or Suction Lift



ORIGINAL MANUFACTURERS OF THE SELF-PRIMING CENTRIFUGAL PUMP

LABOUR

THE LABOUR COMPANY, INC. * Elkhart, Indiana, U.S.A.



NEW SOLUTIONS of processing problems

(Continued from page 26)

of pure nickel, the plates have elongated holes, conical in cross section. The smaller opening is pointed toward material being screened. Any grain passing through the holes will fall free because of the conical shape. Hole size is 0.0035" x 0.067". Plate is 0.0087" thick. Open area consists of 10 percent of the plate.

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The dewaterer used in the process is a top feed rotary compartmented drum vacuum filter with radial and end wall extensions around the drum panels to form a series of hoppers. In operation, slurry feeds into each hopper as it approaches the peak of its travel in drum rotation.



Excess water is removed from washed aluminum oxide abrasive by rotary hopper vacuum dewaterer

Application of vacuum causes solids to form an ideal filtering medium and holds cake securely within each hopper. Discharge from hoppers is achieved at lowest point of travel, when hopper is inverted. Drainage compartments beneath hoppers have bottoms sloping down toward filtrate outlet lines in order to facilitate complete drainage and avoid moisture blowback during cake discharge. Basic design of unit eliminates necessity for adjustment of feed consistency. Continuous automatic operation is achieved with virtually no supervision.

Results: The electrolytically-formed perforated plates last at least a year, compared with six weeks for the wire screens. Plates don't clog readily and they can be easily wiped clean when necessary. Plates will not pass grains larger than 150 mesh.

(Electro-plate screen is product of Pyramid Screen Company, Dept. CP, 264 Mason Terrace, Brookline 46, Boston, Mass. . . . or for more information check CP 1740 opposite last page.)

(Conkey rotary hopper vacuum dewaterers are product of Chicago Bridge and Iron Company, Dept. CP, 165 Broadway Building, New York 6, N. Y. . . . or for more information check CP 1740A on form opposite last page.)

Macon stops "red water" by installing automatic pH control

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Problem: Contaminated "red water," caused by iron oxide particles breaking loose from water mains was a cause of considerable trouble at the Macon Water Works, Macon, Georgia. Condition occurs when pH of the water gets too low. This causes the iron mains to oxidize — giving the water a rusty of red color.

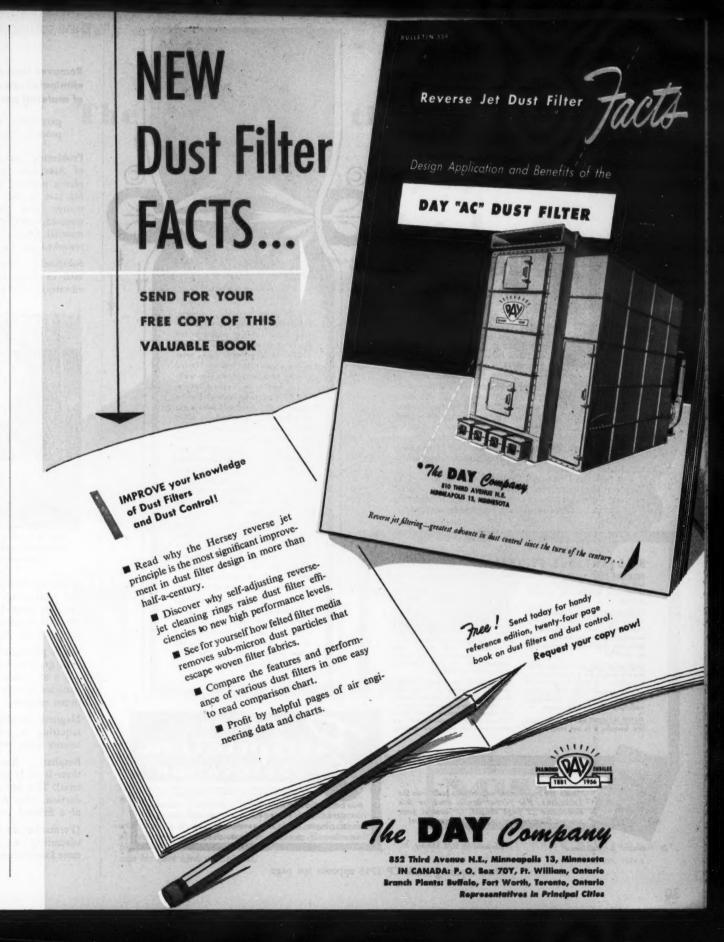
Solution: Automatic pH meters with recorders and controllers were installed in the chemical room. Electrode sets are supplied with continuous samples drawn from control points after the addition of alum and lime. Automatic addition of liquid alum and chlorine lowers the raw water pH of 7.6 to a control range of 6.4 to 6.6 and maintains the value to within 0.1 pH unit.

Alum causes suspended material in water to coagulate and form a floc. After passing through settling basins where the floc precipitates, the water is further treated with dry lime by a pH controlled system to bring pH to 8.5. Water in this slightly alkaline condition is relatively non-corrosive to iron mains and is clear, colorless, and uniform in quality.

Results: Automatic control has eliminated the problem to the satisfaction of all concerned. Estimated savings in water is about 100,000 gal per day which previously was "blown off" manually from fire hydrants. Alum and chlorine consumption have been cut about 50 per cent. Estimated savings in alum alone have amounted to about \$1500 per year.

(Automatic pH controlling equipment is product of Beckman Instruments, Inc., Dept. CP, Fullerton, California... or for more information check CP 1741 on form opposite last page.)

For more information on product at right, specify CP 1742
... see information request blank opposite last page.





Efficiencies up to 99.99%

Cloth filter systems of one design or another have long been used by industry for cleaning industrial gases and/or recovering dust or other suspensions. But three prob-

lems are common to such systems...(1) Extreme changes in pressure drop and filtering efficiency as dust cakes accumulate on the filter surface . . . (2) Wide pressure fluctuations and surges in the plant system as filter units become clogged or are cut out and rapped for cleaning ... and (3) Rapid deterioration of the filter material by the vibration, shaking and rapping equipment used for cleaning.

But now the DUALAIRE Collector—as engineered by Western Precipitation, pioneers in the field of dust recovery-provides the answer to these and other problems common to conventional bag-house equipment.

8 ADVANTAGES OF DUALAIRE DESIGN...

PRESSURE DROP remains uniformly lew at all times because the dust

FILTERING EFFICIENCY remains uni-formly high at all times without the "'choking" action characteristic of conventional bag-houses. Actual field tests show efficiencies as high as an analysis.

<u>DUST RECOVERY</u> is in steady increments — not in sudden large "batches" as with conventional rapping systems. Thus the Dualaire eliminates surges and detrimental variations in the plant system.

FILTER ELEMENT has a much longer life because it is not subjected to

the stresses of rapping or jarring while being cleaned. Dualaire reverse-jet cleaning action is gentle, yet far more effective.

GREAT SAVINGS are also made in space and the size of installation required. Because each Dualaire filter unit is cleaned more-er-less constantly without shut-down, there is no need for castly standby units — or the complicated switching equipment to cut standby equipment in and out.

BASIC UNITS are "sectionalized" and are available in S standard heights. Sections can be belted together in any desired multiple, providing a capacity range to fit virtually any requirement. As needs increase, add more sections.

There are many other advantages built into the DUALAIRE. For further details send for this descriptive 12 page booklet. Or contact your arest Western Precipitation representative!

"Dualaire" & "Multiele

30

Licensed by H. J. Hereey, Jr.



CORPORATION

Main Offices: 1023 WEST NINTH STREET, LOS ANGELES 15, CALIFORNIA CHRYSLER BLDG., NEW YORK 17 . 1 N. La SALLE ST. BLDG., CHICAGO 2 3252 PEACHTREE RD. N.E., ATLANTA 5 . HOBART BLDG., SAN FRANCISCO 4 PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

When inquiring check CP 1743 opposite last page

NEW SOLUTIONS of processing problems

Removes ferrous contamination eliminates reworking 1000 lb of material per week . . .

permanent non-electric magnetic separators produce product free of metallic impurities

Problem: At the Plastics and Resins Division of American Cyanamid in Wallingford, Conn., plastic molding compound granules are produced for sale to manufacturers of plastic articles. No matter how carefully plastic granules were screened, metallic impurities found their way into material. Over 1000 lb of plastic material had to be reworked per week.

Solution: Bantam permanent plate magnets, each 18" long, were installed 1/2" over end of the vibrating conveyors carrying plastic granules to



One of the four permanent magnetic grates used by American Cyanamid Co. in Wallingford, Conn. plant to separate tramp iron from powdered plastics

packaging stations. As the small granules shake and bounce up from conveyors, any fine iron particles present are instantly attracted by magnet and securely held, allowing pure plastic to pass into the finish drums.

When plastic is produced in powder form, magnetic grate is used for iron separation. Here, four 61/2 x 8" grates are used. These remove fine iron particles as powdered plastic flows over and between magnetic tubes.

Magnetic installations are completely non-electric, requiring no wiring or connections and no maintenance other than periodic cleaning.

Results: Since installation of these magnets there is no longer any need to rework plastic material. This actually has resulted in increased production. Also, American Cyanamid is now assured of a finished product free of contamination.

(Permanent magnets are a product of Eriez Manufacturing Co., Dept. CP, Erie, Penn. . . . or for more information check CP 1744 opposite last page.)

CHEMICAL PROCESSING

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Feeders boost kiln output, cut fuel costs . . .

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assure steady feed, reduce gas temperature fluctuations

By using special feeders as secondary feeding and proportioning devices, a large processing plant has been able to increase its kiln capacity and lower its fuel oil consumption. Feeders supply a uniform and constant rate of feed to the kilns.

The feeders are installed between rotary filters and the screw conveyors that feed the kilns. Latter are used to calcine the moist, crystalline filter cake. Original method was to feed the filter cake from the filters direct to the screw conveyors.

Since the feed rate of the slurry going to the filter and the moisture content of the cake were never perfectly uniform, the feed going to the kilns also fluctuated. This caused fluctuations in flue gas temperatures which in turn, had an adverse effect on kiln's thermal efficiency.

Feeders are designed to handle sticky, wet materials. Units consist essentially of a revolving cylinder, mounted on a vertical shaft. Below the cylinder, mounted on the same shaft, is a circular plate somewhat larger in diameter than the cylinder.

A stationary plow extends through the gap existing between the plate and the cylinder. Plow strips off material in cylinder as the unit turns. Rate of discharge is constant, thereby eliminating fluctuations in feed going to kilns. This has resulted in lower flue gas temperatures and lower fuel consumption.

(Com-Bin feeders are product of Pulva Corporation, Dept. CP, 550 High Street, Perth Amboy, N. J. . . . or for more information check CP 1745 opposite last page.)

For more information on product at right, specify CP 1746
. . . see information request blank opposite last page.



... the MIISSION Centrifugal Pump

When you have a Mission Centrifugal pump as the heart of your plant you are assured of a smooth, continuous flow that eliminates vibration and minimizes turbulence. Standard concentric casings range from 1" to 6" discharge sizes. Mission Centrifugal Pumps are available in capacities up to 2,000 GPM, heads up to 500 feet.

All parts coming in contact with fluids pumped are available in cast iron, carbon steel, bronzes, aluminum, stainless steel, Ni-Resist, Monel, nickel, Misaloy 3, 10, or 20, and any other metal which can be cast and machined.



CENTRIFUGAL PUMP DIVISION

Intermediate, solvent, and modifier -

OF MANY
USES

3-METHOXY BUTANOL

Six other aldol materials also available

PHYSICAL PROPERTIES
OF
3-METHOXY BUTANOL

Molecular weight	104.15
Sp gr (20°/20°C)	0.9229
Freezing point (°C)	-85
Boiling point (°C @ 760 mm)	161.1
Flash point (°F, COC)	163
Heat of vaporization (gm cal/gm)	116.67
Vapor pressure (mm @ 20°C)	0.9
Evaporation rate (n-butyl acetate = 100)	12
Coefficient of expansion (per °C @ 55°C)	0.00090

Refractive index (n _D ²⁰)	1.4160
Viscosity (centipoises @ 20°C)	3.1
Dilution ratio	
Toluene	3.30
Haphtha	0.70
Solubility (@ 20°C)	
% water in	Complete
% in water	Complete

Uses: As a chemical intermediate to make plasticizers, synthetic lubricants, surface-active agents, and selective herbicides. Chemical is a solvent in nitrocellulose lacquers, textile and leather dyes, printing inks, and wood stains; a coupling agent hydraulic fluid polyglycol — and castor oil-based heavy duty brake fluids; and as a modifier and solvent for melamine and urea-formaldehyde resins. It is a film-forming aid and antifreeze agent in paints.

Features: 3-Methoxy butanol reacts with phosphorus oxychloride, phthalic anhydride, mono- and dibasic acids, and long chain fatty alcohols. Many of the resulting esters are excellent plasticizers that impart low temp flexibility. The acetic ester makes an excellent lacquer solvent. Other esters have lubricating and surface-active qualities. When esterified with 2,4-D-type acids, highly active and selective herbicides of low volatility are produced.

In nitrocellulose lacquers, 3-methoxy butanol has a high hydrocarbon dilution ratio. Relative evaporation rate is slow enough to obtain high blush-retarding effects, flow control, and freedom from dusting and orange peel. As a high-boiling, high-flash diluent in hydraulic fluids, compound permits economical incorporation of lower alcohols. It has good stability, extremely low rubber swell.

3-Methoxy butylated resins have improved water and hydrocarbon tolerance and show an ease of dehydration. The 3-methoxy butyl radical also acts as a builtin leveling agent when used for baking enamels.

Description: The water-white liquid has for its chemical formula: CH₃CH(OCH₃)CH₂CH₂OH. It is available in commercial quantities with the typical properties shown in table.

3-Methoxy butanol is produced in manufacturer's Bishop, Texas, plant. This plant differs from conventional aldol operations in that a wide variety of aldol products can be made.

At the Bishop plant, various aldol units have been combined into a compact group and give — in one installation — a plant capable of producing many aldol chemicals at a reasonable cost. Although the first of these to be produced is 3-methoxy butanol, others soon to be available include:

1,3-Butylene glycol — with one primary and one secondary hydroxyl group which readily undergo esterification, it finds use in hydraulic brake fluids, polyurethanes, humectants, printing inks, antifreeze, textile oils, and as an intermediate.

Methylisopropenyl ketone (MIPK) — a highly reactive vinyl monomer. It polymerizes to a tough,

clear plastic, and copolymerizes with butadiene, styrene, vinylidene chloride, vinyl pyridines, isobutylene, methyl methacrylate, and other monomers. Peroxides and UV light promote polymerization. Introduction of a ketone group permits further modification. Suggested uses are: synthetic rubbers, plasticizers, ion exchange resins, adhesive formulations, synthetic films, and fibers.

Butyraldehyde — forms alcohols with acetals and is readily oxidized to butyric acid. It reacts with polyvinyl alcohols to form polyvinyl butyral, used in safety glass and organic coatings.

Hexylene glycol — used in brake fluids, grinding aids, cutting oils, and printing inks.

Trimethylolpropane (TMP) — also being considered. With three primary hydroxyl groups available for esterfication, it is well suited for polyurethane and alkyd resins.

Anhydro enneaheptitol — versatile polyhydric alcohol which has five available hydroxyl groups can be esterified to form highly viscous resins.

(Aldol chemicals are products of Chemical Div., Celanese Corp. of America, Dept. CP, 180 Madison Ave., New York 16, N. Y. Check CP 1747 opposite last page.)

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Carbon black fillers instead of silica-type for silicone rubber

Give essentially different products by technique used in compounding organic rubbers

Uses: Those applications where the properties of inorganic or silicone rubber alone have not been able to meet requirements, such as in compounding a conductive silicone rubber.

Features: Carbon black-filled silicone rubber is essentially a different product, and many of the techniques used in compounded organic rubbers should be applicable to this new silicone rubber. Many of the blacks tested have given a reinforcement equal to that obtained with silica fillers.

Description: Through use of manufacturer's W-96 silicone, silicone rubber is being cured successfully using carbon black filler instead of conventional silica-type fillers.

Comparison of typical post-cured properties of a carbon black-filled silicone rubber point up this similarity in reinforcement.

Property	Black-Filled	Silica-Filled
Hardness Shore A)	54	54
Tensile Strength (psi)	750	720
Elongation (%)	270	250
Compression Set (Method	B,	
% original deflection,		
after 22 hr @ 350°F)	47	13
Brittle Point (°F)	-90	-93

(W-96 silicone is a product of Linde Air Products Co., A Div. of Union Carbide & Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N.Y.... or for more information check CP 1748 on form opposite last page.)

Tells how asphalt, tar are rubberized

A rubberized material produced specifically for use in asphalt and tar is described in a 16-page illustrated technical bulletin. Made from a combination of unvulcanized synthetic rubber latex and minute particles of barytes, three types are available. Bulletin describes these as a paving grade for bituminous concrete, a mixing grade for rubberizing asphalt prior to its use, and Jetlock for rubberizing tar for jet fuel-resistant airfield surfaces.

"Rubarite" is issued by Rubarite Inc., Dept. CP, 2165 Board of Trade Bldg., 141 W. Jackson Blvd., Chicago, Ill. When inquiring check CP 1749 on form opposite last page.



Have a problem that requires a detergent? A wetting agent? An emulsifier? A foaming agent? Whether you require the basic raw material or a surfactant in intermediate form or a finished product—it will pay you to investigate the complete Oronite line.

Oronite surfactants are priced competitively and have the high quality and uniformity you expect from the world's largest producer of synthetic detergent raw materials.

Why not talk over your needs with an Oronite detergent specialist? Write or phone the Oronite office nearest you.



New! Alkane Technical Bulletin—available to those interested in processing finished detergents from the basic raw material.



ORONITE CHEMICAL COMPANY

200 Bush Street, San Francisco 20, California • 714 W. Olympic Blvd., Los Angeles 15, California 30 Rockefeller Plaza, New York 20, New York • 20 North Wacker Drive, Chicage 6, Illinois Mercantile Securities Building, Dallas 1, Texas • Carew Tower, Cincinnati 2, Ohio

3137

When inquiring check CP 1750 opposite last page



Specifically designed to inactivate CALCIUM and MAGNESIUM PLUS all traces of IRON. In alkaline processing liquors, calcium and iron sequestering is accomplished SIMULTANEOUSLY.

CHEELOX B-14 is the new, all-purpose chelating agent which is soluble and stable at all temperatures in neutral, acid and alkaline solutions. For economical control of metal ions, regardless of the problem, Cheelox B-14 is the product to use.

To determine the effectiveness and economy of Cheelox B-14, we suggest you compare this new sequestering agent with the product you are now using.

Send today for a sample and technical data on the uses of Cheelox B-14.

From Research to Reality

ANTARA CHEMICALS

A SALES DIVISION OF GENERAL ANILINE & FILM CORPORATION
435 HUDSON STREET . NEW YORK 14, NEW YORK

SALES OFFICES: New York * Boston * Providence * Philadelphia * Charlotte * Chattanooga * Chicago Portland, Ore. * San Francisco * Los Angeles * IN CANADA Chemical Developments of Canada, Ltd., Montreal ANTARA gaf

It doesn't cost much to improve filtration by flocculation . . .

degree and rate of sedimentation, filtration are improved Go

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Uses: As a flocculating agent for disposal or recovery operations involving clarification, sedimentation, or filtration, especially in the paper, textile, and mining industries and in sewage disposal.

Features: Agent improves the degree and rate of sedimentation and at the same time improves the filtration rate characteristics of dispersed solids. In filtration, the agent forms a more porous filter cake with resultant reduced pressure drop and increased throughput. Efficient washing of cake is more easily accomplished.

These qualities may be achieved at low cost, since treatment as low as 0.01 lb/ton of dispersed solids is normally sufficient.

The agent gives outstanding performance in systems where organic matter is involved.

Description: Flocculating agent is a dry, water-soluble synthetic resin, also available as a 20% water solution. Physical properties of the solid are:

Particle size (% through
16-mesh screen)
Moisture content (% max)
7

. . . and of the solution:

Total solids (%) 20 pH 7-9

Neither has an odor, and the solution is clear, viscous, and straw-colored.

(Good-rite K-720 flocculating agent and K-720S, a 20% water solution, are developments of B.F. Goodrich Chemical Co., Dept. CP, 324 Rose Bldg., Cleveland 15, Ohio . . . or for more information check CP 1751 on the convenient Reader Service slip located opposite last page.)

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For more information on product at left, specify CP 1752
. . . see information request blank opposite last page.

Good color and heat stability given by chlorinated paraffin with 50% Cl₂ content . . .

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od-752 iest can be used as flame-retardant plasticizer in plastics and paints

Uses: Material is suitable for use in plastics and paints as a flame retardant liquid plasticizer.

Features: Product provides a high standard of color and heat stability for chlorinated paraffins of this chlorine content.

Description: Liquid chlorinated paraffin with 50% chlorine content has a high viscosity of 125 poises. Material is odor-free, non-toxic, and non-flammable. It is packed in steel drums, 525 lb net.

(Chlorowax 50 is product of Chlorinated Products Div., Diamond Alkali Co., Dept. CP, 300 Union Commerce Bldg., Cleveland 14, Ohio . . . or for more information check CP 1753 opp. last page.)

Chemical serves as versatile and highly reactive intermediate . . .

phosphorus pentasulfide available as powder or in solid form

Uses: Principal use is in the manufacture of thiophosphates for oil and grease additives, ore flotation agents, and insecticides.

Features: Material is a versatile, highly reactive intermediate for many organic syntheses.

Description: Distilled phosphorus pentasulfide, made with pure electric furnace phosphorus, is being marketed as a greenish yellow granular powder. Powdered material is packed in 150 and 325 lb drums. P₂S₅ also can be made available in solid form. Typical analysis is 27.9% phosphorus, 72.0% sulfur, with melting point of about 280°C.

(Phosphorus pentasulfide is product of Inorganic Chemicals Div., Monsanto Chemical Co., Dept. CP, 1700 S. Second St., St. Louis 1, Mo. . . . or check CP 1754 opposite last page.)

Properties, specs, uses of propylene glycol

Data on physical, physiological properties, specs, shipping containers, constant-boiling mixtures, solubilities, and uses of propylene glycol are presented in 16-page folder, F-8738, issued by Carbide and Carbon Chemicals Co., a Div. of Union Carbide and Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N.Y. When inquiring check CP 1755 on form opposite last page.



For the new look in:

Paper -glossier wraps for greater sales appeal, improved seal and scuff. The package competes with costlier see-thru wraps in appearance.

Waxes-fortified and up-graded for year 'round processing advantages in your plant.

Printing Ink-greater slip resistance and improved scuff, sharper color contrast.

Rubber-an excellent modifier and lubricant for natural and synthetic elastomers. Replaces costly vegetable and natural waxes.

Paper Box Board—improves coatings and other functional properties.

Cork Tile-gets a new high gloss, scuff-resistant finish.

Asbestes Siding - protection from handling and for improved weathering.

New Look and improved qualities for waxes, printing inks, paper, paper box board, rubber, asbestos siding, and many other products are being obtained by the addition of low-molecular-weight, low-viscosity A-C Polyethylene. The low cost of A-C Polyethylene, its ease of handling and the profitable improvements it contributes, should prompt you to evaluate this versatile material in your plant without delay.

Write on your letterhead today for additional data and samples indicating your intended use. A-C POLYETHYLENE is available in regular or emulsifiable form.



AC Polyethylene

SEMET-SOLVAY PETROCHEMICAL DIVISION

Allied Chemical & Dye Corporation



40 RECTOR STREET, NEW YORK 6, N. Y. New York • Cleveland • Chicago

*trade-mark

When inquiring check CP 1756 opposite last page

complex chemical structure of new ADM fatty alcohols.

Molecular model shows the

for modern technology

Hydrogenated and Distilled Fatty Acids and Stearic Acid... Hydrogenated Vegetable, Fish, Sperm Oil and Tallow... Hydrogenated Castor Oil ... Stearyl, Cetyl, Oleyl, Alcohol ... Sperm Oils and Spermaceti ... Behenic Acid ... Erucic Acid ... Hydroxystearic Acid

RODUCTS

Other ADM Products:

Linseed Oil, Soybean Oil, Fish Oil, Paint Vehicles, Vinyl Plasticizers, Foundry Binders, Industrial Cereals, Vegetable Proteins, Wheat Flour, Dehydrated Alfalfa Meal, Livestock and Poultry Feeds. Here's something to stir the minds of research chemists... new saturated and unsaturated fatty alcohols in tank-car and carload quantities from ADM's ultra-modern Ashtabula, Ohio, plant.

These latest ADOLS and UNADOLS have a complex chemical structure. They have improved properties and higher purity. And, most important to you, they have the potential to impart advantages to the products you make—textiles, plastics, lubricating oils and greases, detergents and many others.

ADM does not consume these Chemifats. These new chemicals are developed for you. What can you do with them?

Write for samples of these new fatty alcohols: Saturated alcohols—Lauryl, Cetyl, Stearyl, Cetyl-Stearyl, Arachidyl-Behenyl, Behenyl and 1, 12 Hydroxy Stearyl; Unsaturated alcohols—Stearyl Oleyl, Clinoleyl, Linoleyl, Linoleyl, Arachidonyl-Clupanodonyl, Erucyl and Ricinoleyl.

Archer Daniels-Midland company

CHEMICAL PRODUCTS DIVISION • 2191 West 110th Street • Cleveland 2, Ohio

When inquiring check CP 1757 opposite last page

MATERIALS

Chemically-combined water and impurities are low in calcined alumina . . .

dusting is reduced, and shrinkage in products made from it is less

Uses: Applications range from abrasives production to use in refractories for lining tanks or furnaces.

Features: Calcined alumina contains a minimum of chemically-combined water, and absorbs only trace quantities. Dusting is reduced and shrinkage in products is less. Products also are highly resistant to thermal and mechanical shock.

Description: Called R-2003, the alumina is fired at higher temperatures than metallurgical alumina. It has high purity and is produced by an elaborate combination Bayer-Sinter process. Extreme care has been given to keep impurities such as the oxides of iron, silicon, and titanium at a minimum. (High-purity calcined alumina is a product of

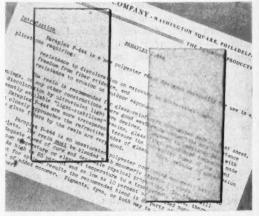
Reynolds Metals Co., Dept. CP, 2500 S. Third St., Louisville, Ky. Check CP 1758 opposite last page.)

High resistance to UV light, very good transparency in resin-glass laminates . . .

products resist erosion on outdoor exposure, and are free from fiber evidence

Uses: For transparent glass-reinforced laminates for outdoor applications which must resist discoloration and weathering, such as structural panels, skylights, awnings.

Features: Products made from the resin resist discoloration when subjected to UV light, and have very good transparency, compared to lami-



Glass-resin laminate (left) is more transparent than conventional laminate (right) because refractive index of resin approaches that of the glass

NO

nates made with presently available "light-stabilized" resins. This is due to the refractive index of the cured resin closely approaching that of glass. The laminates are also free from fiber evidence and they resist erosion on outdoor exposure.

Description: Resin is an unsaturated polyester containing monomeric methyl methacrylate. It must be blended with from 10 to 25% monomeric styrene or vinyl toluene to obtain adequate cure speed and other desirable physical properties. For optimum results, the recommended blend is 80 parts resin and 20 parts added monomer. Pigments, dyes, or both may be added to produce a colored polymer. Wetting of and adhesion to the glass fibers by the resin are very good. Typical physical properties of the liquid resin as supplied, and a recommended blend are:

Acid No. (max)	Resin as supplied 38.0	80 parts resin 20 parts styrene 30.0
Viscosity (G-H @ 25°C)	$\mathbf{Z}^{\scriptscriptstyle +} = \mathbf{Z}\mathbf{I}^{\scriptscriptstyle +}$	F — G
Polyester (%)	75	60
Sp gr (25°/15°C)	1.183	1.115
Color (APHA max)	100	100
Refractive index (n _D ²⁵) Catalyzed stability	1.4993	1.5105
(1% benzoyl peroxide, days @ 25°C)	-	21/2

Physical properties of cured, unfilled resin blend (80/20, as above):

Flexural strength	,
Ultimate (psi)	17,400
Modulus of elasticity (psi)	634,000
Tensil strength	
Ultimate (psi)	10,000
Modulus of elasticity (psi)	656,000
Elongation (%)	<2
Hardness (Rockwell M scale)	110-115
Heat distortion temp (°C	
2°/min @ 264 psi)	80
Water resistance (% wt absorbed	
in 24 hr @ 25°C)	0.25
Refractive index (n _D ²⁵)	1.546
Sp gr (@ 25°C)	1.230
Volume shrinkage (%)	9.3

Limited field experience indicates that more bubbles or voids may develop in this resin than in conventional resins. It is difficult to predict when this will occur, therefore individual testing in the plant is recommended. This formation is due entirely to entrapped air, and can be reduced by "degassing" either continuously or by batch.

(Paraplex P-444 resin is a product of Rohm & Haas Co., Dept. CP, Washington Square, Philadelphia 5, Pa. . . . or for more information about manufacturer's product reader may simply check CP 1759 on form which is located opposite last

BRIEFS

for buyers of

Sodium Sulfide Sodium Sulfhydrate Flake Caustic Soda

Especially good for repackaging (as in cleansers and other specialties)

are these four sizes of Hooker flake caustic soda, all shown actual size.

"Regular." "fine." and "crystal" sizes are nondusting. And with these flakes, you're sure of actually getting the size you order. In a tightly-controlled flaking-screening operation, we make the flakes just thick enough to stand up well and stay the same size in transit.







Regular flake is shipped in 100-lb. and 400-lb. steel drums; the other sizes in 450-lb, steel drums. The larger drums come in two styles: 14-inch

opening (extra large for easy emptying), or full open head (at slight extra cost).

For data sheet, check the coupon. For test samples, just write and tell us the sizes you'd like.

A tanner could tell you what can happen when sodium sulfide picks

When this happens in a tannery, the leather is likely to develop blue

The five steps we take to help tanners avoid this situation hold meaning for you, if you process with sodium sulfide.

- 1. We use only our own caustic soda in making sulfide. This gives us close control of its composition.
- 2. We never re-use a sulfide drum. You receive every shipment in brand new containers.
- 3. Every drum is lacquer-lined to prevent iron contamination.
- 4. Six sturdy lugs hold the drum lid tight during handling and storage. They're handy for re-sealing the drum, too.
- 5. We individually lacquer the lid of every drum, to make an airtight seal that keeps the product at full strength.

The clean, strong flakes dissolve right into process, even without stirring. No waiting; no decanting.

You've probably gathered by now that sodium sulfide, at Hooker, is a specialty of the house. You're right. And that's a good reason why you stand to get maximum satisfaction with ours.

The flake form is shipped in 90-lb. and 350-lb, drums. Solid form comes in 625-lb. drums. Why not order a trial quantity?

Better pH control

What we said about sulfides also goes for Hooker sodium sulfhydrate, with this important difference:

Some processors are switching to our sulfhydrate, as a replacement for sodium sulfide. Why?

When sulfhydrate goes into solution, it forms less caustic soda than does sodium sulfide. Only half as much, in fact. So these processors are able to get more sulfidity, with less alkalinity, by using sulfhydrate. Maybe there's an idea here for your processing operations, if high pH is a problem in sulfide solutions.

Hooker sodium sulfhydrate dissolves rapidly, even in cold water. There's virtually no sedimentation even after long standing. You can get it in 90-lb. and 350-lb. drums. For more details, check the coupon.

For Technical Data Sheets

- on Hooker chemicals mentioned on this page, check here:
 - ☐ Sodium Sulfide
 - ☐ Sodium Sulfhydrate
 - ☐ Caustic Soda

How up-to-date is your caustic data file? If you're a user of liquid caustic soda, here's some recent material to help you buy better:

☐ Caustic Soda Buyer's Guide. Pocket-size booklet lists advantages of 73% and 50% caustic concentrations; comparative costs; includes nomograph for figuring savings with 73%.

Clip and mail today with your name, title, company address.



1905-Half a Century of Chemicals

From the Salt of the Earth-1955

R ELECTROCHEMICAL COMPANY

15 FORTY-SEVENTH STREET, NIAGARA FALLS, N. Y.

NIAGARA FALLS . TACOMA . MONTAGUE, MICH. . NEW YORK . CHICAGO . LOS ANGELES

When inquiring check CP 1760 opposite last page

NG

Silicone rubbers remain flexible for 150 hr at temperatures up to 600°F . . .

other outstanding properties are not sacrificed

As parts for hot material handling equipment in the glass, ceramics, and metals industries. One anticipated use is as a door seal in kitchen ovens.

Features: Materials are designed to extend application range of silicone rubber to 600°F. They are capable of remaining flexible for 150 hr or longer during continuous exposure up to the peak of the above temperature range. Other outstanding silicone rubber properties, such as ozone-, age-, and weather-resistance, low temp flex, and low moisture adsorption, have not been sacrificed.

Description: These properties are available in both silicone rubber compounds produced by manufacturer, as well as stocks compounded from manufacturer's gums by rubber compounder-fabricators. One representative compound (SE-750A) is particularly suitable for the hot air technique of curing extruded parts.

(Class 700 silicone stocks are products of Silicone Products Dept., General Electric Co., Dept. CP. Silicone Rd., Waterford, N. Y. . . . or for more information check CP 1761 opposite last page.)

Casting resin cured with hardener resists temperatures from -55 to 150°C . . .

suggests electrical, mechanical, laminate applications

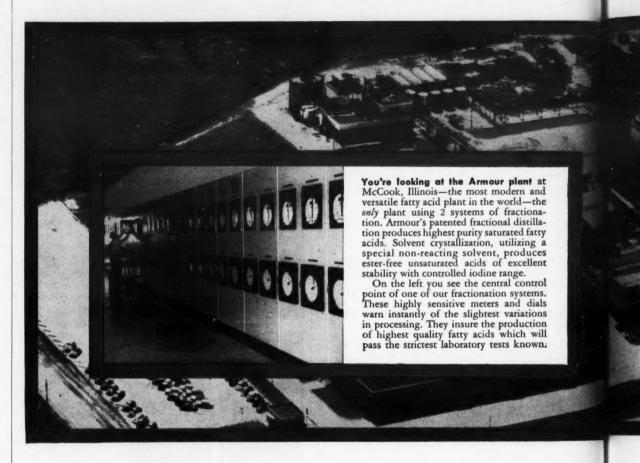
Modified epoxy resin, when cured with hardener, forms a thermosetting polymer which does not crack when subjected to repeated temperature cycling between -55 and 150°C. Polymer exhibits superior fire retardancy and a high heat distortion point. Properties of resin suggest its use in electrical, mechanical, laminate, and other similar applications.

Epoxy casting resin in the uncured state is a liquid of moderate viscosity. Hardener is a free-flowing white powder. Since hardener will absorb moisture, care should be taken to avoid unnecessary exposure during handling. Dermatitis problem usually associated with alkaline curing agents is not a factor with this material. However, acid anhydrides have been known to produce chemical skin burns on prolonged contact. Use of gloves and barrier creams is recommended.

(Aritemp 316 casting resin and Hardener 116 are products of Aries Laboratories, Inc., Dept. CP. 270 Park Ave., New York 17, N. Y. . . . or for more information check CP 1762 opp. last page.)

2-SYSTEM FRACTIONATION

produces highest purity fatty acids in a



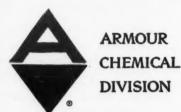
To keep up in today's competitive market, your company must be constantly developing new and improved products as a key to sales growth. New ways must be found to maintain high quality despite rising production costs. Here is how Armour can help you meet this challenge. For research men, Armour can supply purest components to simplify the approach to any problem involving fatty acids. For production men, Armour can supply tank-car quantities of these consistently uniform, high purity Neo-Fat® fatty acids. Their constant composition means greater uniformity in processing. For purchasing agents, since Armour is basic in fats, we can supply the most complete and versatile line of fatty acids at competitive prices. Already, the high purity of Armour Neo-Fats has benefited a wide variety of industries. For example, one of the pure component Armour Neo-Fats has enabled the vinyl plastics industry to decrease acid consumption while increasing the stability of the final plastic. And in grease manufacturing, the constant composition of Armour Neo-Fats has aided the development of multi-purpose greases, thus simplifying grease processing and reducing inventories. You, too, may find the answer to your production and sales problems in the high purity of Armour Neo-Fats.

You can order a specific Neo-Fat without buying other mixed-in acids that are wasteful or harmful to your formulations. The Armour line includes saturated fatty acids from 8 carbon chain lengths through 18, as well as various unsaturated acids. Order either by specification or by composition. The booklets and chart offered at right will help you find ways to put Armour Neo-Fats to work for you. Put the coupon in the mail today.

NO

-used exclusively by Armourin any quantity—for every need!





O Armour and Company • 1355 West 31st Street • Chicago 9, Illinois

	treet, Chicago 9, Illinois
	mples of Armour Neo-Fats which gives in the fields I am listing below:
Name	Title
Firm	Tille
FirmAddress	

When inquiring check CP 1763 opposite last page

Material made of synthetic fibers reinforces plastic laminates . . .

finished products have uniform thickness and unusually smooth surface

Fabrication of plastic laminates of uniform thickness, unusually smooth surface, and equal strength in all directions is made possible by reinforcing material recently introduced. Reinforcing material can be made of three Du Pont synthetic fibers — nylon, Orlon, or Dacron. Fabric differs from most other non-woven reinforcing media in that it is constructed by bonding the fibers mechanically, rather than chemically or thermally. One end-use product for which plastic laminate made with this material would be particularly suitable is chemically-resistant tanks.

(Plastic reinforcing material is manufactured under the trade-name of Mofelt by Charles Lachman Co., Inc., Sub. of Mohawk Carpet Mills, Inc., Dept. CP, Franklin and Grant Sts., Phoenixville, Pa. Check CP 1764 opposite last page.)

(Plastic reinforcing material is also being manufactured under the trade-name of Troytuf by Troy Blanket Mills, Dept. CP, 200 Madison Ave., New York 16, N. Y... or for more information check CP 1764A on form opposite last page.)

Combines resiliency of rubber with weather resistance of asphalt...

remains pliable when cold, firm when hot

Uses: For water-proofing, corrosion prevention, joint sealing, roof coatings and highway surfacing.

Features: Material combines the resiliency of rubber with the weather-resistant qualities of asphalt. The blend remains pliable when cold and holds firm when hot. Since it doesn't oxidize, it can be exposed to the weather without requiring a gravel protective covering.

Where granules or gravel is used, as much as 80% more may be held in place than by ordinary asphalt. It can be applied in damp or frosty weather.

Description: Rubberized asphalt comes in several forms: a roofing or paving compound, a liquid coating, or an aluminized liquid coating which has a metallic aluminum finish. To make the product, live rubber is dissolved in asphalt. A treated rubber additive is also available for onthe-job mixing with ordinary asphalt.

(Rubberized asphalt is a product of Berry Asphalt Co., Dept. CP, PO Box 800, Magnolia, Ark. Check CP 1765 opposite last page.)

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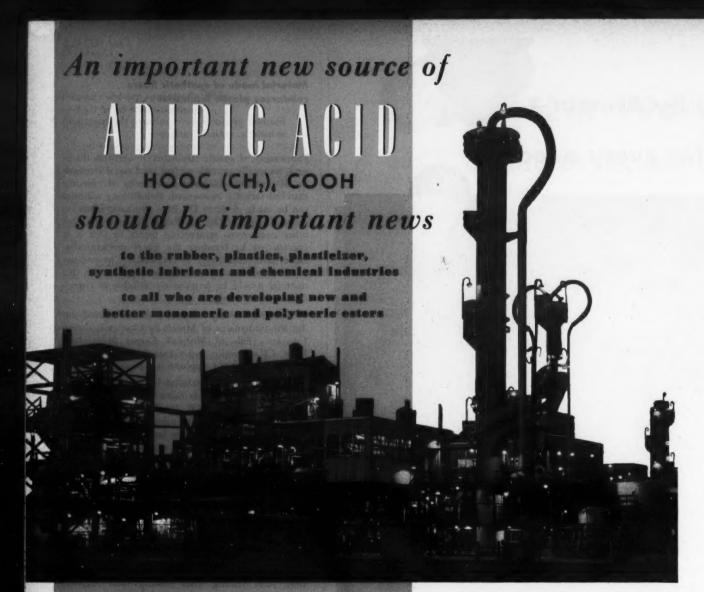
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National Aniline's new Adipic Acid plant at Hopewell, Virginia is important to America and to American industry. For its production of this versatile dicarboxylic acid will be both substantial and basic.

Through Allied Chemical resources, it is completely integrated right back to the most basic raw materials. Through Allied Chemical research, the manufacturing process is efficient, uniform, continuous. Through modern plant engineering and construction, its output will be competitive in every respect.

From present and potential users of ADIPIC ACID, we invite inquiries for samples, technical data and quotations on price and delivery.

SEND FOR TECHNICAL BULLETIN 1-12

This comprehensive 8-page technical bulletin on National Adipic Acid gives physical and chemical properties; principal reactions on the carboxyl and alpha methylene groups; solubility curve, and suggested uses with copious literature references. Your copy will be sent without obligation on request.



ALLIED CHEMICAL & DYE CORPORATION 40 RECTOR STREET, NEW YORK 6, N. Y.



MATERIALS

increases palatability of orally-consumed medicinals . . .

has no side effect on vitamins or food supplements

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Uses: As a thickener and whipping agent to increase palatability of vitamins and other orally-consumed medicinals.

Features: Flavor-masking agent may be incorporated with food supplements and vitamins into chocolate or fruit flavored powders or syrups. Finished beverage has smooth mouth feel and decreases the volatile effect on tasting and smelling, thus resulting in a marked masking of undesirable flavors and aromas. Agent has no side effect on food supplements or vitamins.

Description: Recommended use of product is $\frac{1}{2}$ gm in mix for use in eight ounces of milk.

(Aquacel #126 is a product of Soluble Products Co., Dept. CP, 360 Furman St., Brooklyn 1, N.Y. . . . or for more information check CP 1766 on form which is located opposite last page.)

Petrochemical solvents meet variety of industrial needs . . .

thirty-two large volume products are available

Thirty-two large volume petroleum and coal-tar derived solvents are available from manufacturer. Materials are designed for use in rubber cements, paints and coatings, other industrial products.

(For more information on solvents contact Modern Mineral Solvents Corp., Dept. CP, State St., Perth Amboy, N.J. . . . or check CP 1767 on form which is located opposite last page.)

For more information on product at left, specify CP 1768
. . . see information request blank opposite last page.

Fatty acid amine condensates contain up to 50% more amide . . .

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series are practically odorless and extremely light in color

Uses: Recommended for detergency, wetting, foaming, emulsifying, thickening, stabilizing, and dispersing applications.

Features: Compared with similar conventional materials, products contain up to 50% more amide than products sold previously as "100% active." Series are practically odorless and extremely light in color; this should be of advantage in cosmetics. Products require much less neutralizing agent to bring them to a neutral pH. When used with other surface-active agents, they show superior thickening and foam-building characteristics.

Description: Monamids, 150 Series, have increased alkanolamid contents. Specifications are:

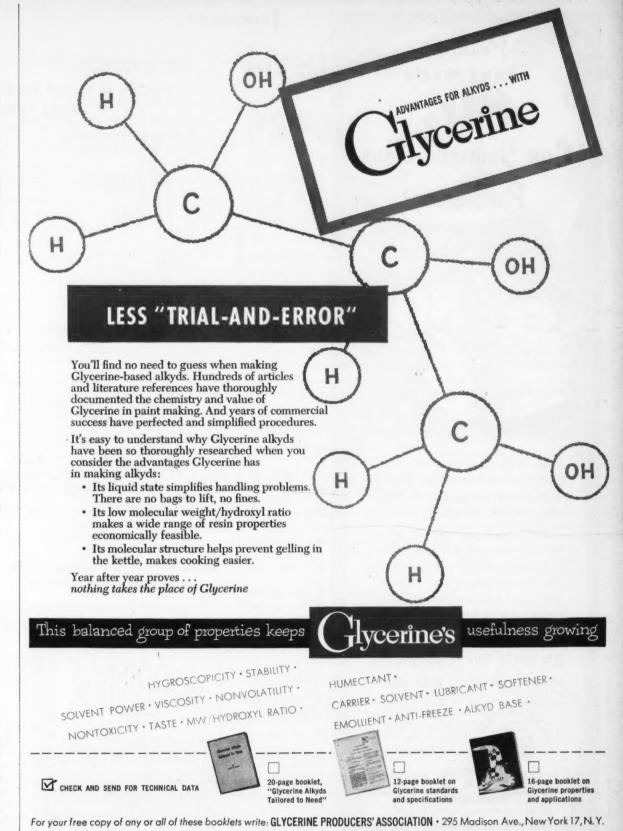
	150-L	150-TF	150-D
Fatty acid component	Lauric	Capric & Myristic	Coconut
Amine component	Diethan- olamine	Diethan- olamine	Diethan- olamine
Condensate (approx. %)	86	86	86
Uncondensed F.A., as laur	ic		
(%)	3.5	3.5	2-3
Methanol (%)	7	. 7	-0-
Water (%)	0.3	0.3	< 0.5
Sp gr	0.96	0.96	0.99
Mp (°F, approx.)	96	96	_
Appearance at room temp	Crystal-	Crystal	Viscous
Odor	Very slight, pleasant	Slight, aromatic	Coconut
Color	Practically colorless	Light yellow	Amber
Alkali No.	40-50	40-50	15-30
pH of 10% water dispersion	10	10	9

Monamid 150-DR has very light color, practically no odor. Other specs are same as for 150-D

(Fatty acid amine condensates are products of Mona Industries, Inc., Dept. CP, Paterson 4, N.J. Check CP 1769 opposite last page.)

Roll out the barrels for tooling plastics

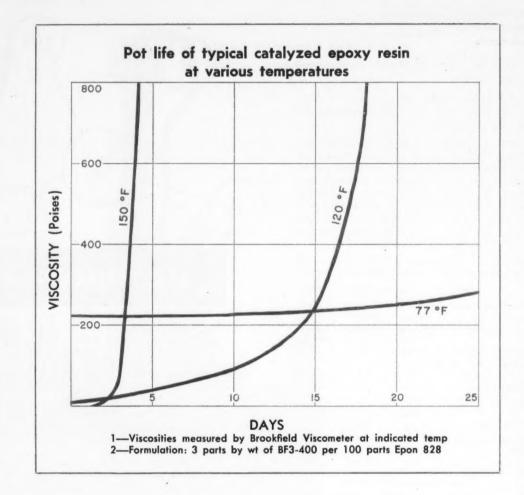
Group of 3 x 5" size cards, die-cut to resemble white drums in which manufacturer ships tooling plastics, gives all necessary information relative to the hardener and other pertinent information concerning the resin involved for manufacturer's Epocast resins. Cards are punched for ring binding. Epocast card file is available from Furane Plastics, Inc., Dept. CP, 4516 Brazil St., Los Angeles 39, Calif. Check CP 1770 opposite last page.



When inquiring check CP 1771 opposite last page

NOVEMBER, 1955





Curing agent, an amine complex of BF3, is easy to handle, and makes it -

easy to regulate epoxy resin cures

Polymerization occurs only upon heating, resin-cure agent blends are stable up to several months at room temp



As a curing agent for epoxy resins, it is expected to find application in epoxies which are used for dipping and impregnating applications where long pot life is required. It is also useful in adhesives and is especially applicable to structural applications.

Features: Curing agent makes it easy to regulate epoxy resin cures. Polymerization occurs only upon



see's Liquid Sulfur Dioxide is practically 100% pure . . .

We would like to discuss this versatile chemical with you.



AVAILABLE IN: Cylinders, Ton **Drums, Tank Trucks** and Tank Cars.

NESSEE



CORPORATION

617-29 Grant Building, Atlanta, Georgia

When inquiring check CP 1772 opposite last page

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heating, and is easy to control. Agent is easy to handle, and blends of it with epoxy resins are stable up to several months at room temperature.

When cured, these catalyzed mixtures yield products that have superior chemical and heat resistance, when compared to similar products cured with aliphatic polyamine curing agents.

Description: Described as an amine complex of boron trifluoride (BF₃), curing agent is generally used in concentrations of about 3 phr (parts by weight per 100 parts of resin), although as little as one phr will effect a cure if high enough temperatures are employed. Larger amounts can be used if greater activity is required, but are not recommended.

Release agents that can be used are of the film type. They include Mylar, methyl cellulose (deposited from a 5% aqueous solution) and Garan 225.

Toxicity data are limited but the agent appears to be relatively innocuous on short exposure. If it is to be used at elevated temperatures, adequate ventilation should be provided. Skin contact must be avoided when handling the material.

Addition of Curing Agent to Epoxy Resin

Let's use manufacturer's Epon 828 epoxy resin as a specific example. In large batches, the resin is heated by a steam coil to 185°F with continuous stirring.

About five pounds of resin per hundred pounds of batch are removed when temperature reaches 122°F. Three pounds of curing agent are mixed in until a smooth paste is formed. When remainder of resin is up to 185°F, steam is shut off and the catalyst-resin mix is added. Mixing is continued for ten minutes, then cooling water is run through the coils, without stopping stirring, until room temperature is reached.

Physical properties of a glass cloth-resin laminate made with 181-Volan A cloth and press-cured for 30 minutes under contact pressure at 320°F, and followed by 90 minutes at 50 psi at 320°F were:

Flex strength (psi @ 77°F) 68,000 Flex modulus (psi @ 77°F) 2.9 x 10°

In adhesives and in filled castings or laminates, the heat developed during cure is more readily dissipated, and higher cure temperatures may be allowable. For example, a satisfactory adhesive bond was developed within 3½ minutes after a one inch lapped joint of 18-gage steel sheet, spread with an Epon resin adhesive incorporating the complex was placed in direct contact with a hot plate held at 400°F. Lap shear strength of this joint was about 2000 psi.

(Epon Curing Agent BF3-400 is a product of Shell Chemical Corp., Dept. CP, 380 Madison Ave., New York 17, N. Y. Check CP 1773 opp. last page.)

AVAILABLE IN



TANK-CAR

AND



DRUM QUANTITIES

Du Pont Hexalin[®]

Cyclohexanol

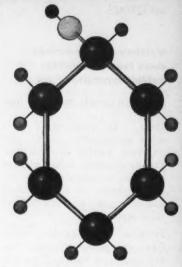
Whether you require one drum or tank-car lots, delivery of "Hexalin" is made promptly upon receipt of your order.

"Hexalin" is shipped as follows:

- Tank cars—8,000-gallon and 10,000gallon capacities.
- Non-returnable drums, 55-gallon capacity—net weight: 430 lbs.

Investigate DU PONT HEXALIN®

Cyclohexanol (C₆ H₁₁ OH)



SPECIFICATIONS:*

- Boiling Range at 760 mm.: 160.0°C. Min. to 162.4°C. Max.
- Specific Gravity 25°/25°C.: 0.946-0.950

PROPERTIES

- · Clear, colorless, oily liquid with a camphoraceous odor
- Soluble in water at 20°C, to the extent of 3.6% by weight
- Water is soluble in "Hexalin" at 20°C. to the extent of 11% of weight
- Miscible with: Ethanol, ethyl ester, linseed oil, petroleum solvents, aromatic hydrocarbons and most other common organic solvents
- Dissolves alkyd resins, alcohol-soluble phenolic resins, ethyl cellulose.

PRINCIPAL USES

PLASTICS: Ingredient used in the manufacture of ester plasticizers.

DITERGINT: Stabilizer and homogenizer for soap and synthetic detergent emulsions.

PETROLEUM: Intermediate for lubricating oil additives.

TEXTILES: Stabilizer and homogenizer in textile soaps; stabilizer for emulsions; solvent for dyes; kier boiling assistant.

FINISHES: Solvent in lacquers, shellacs and varnishes; high boiling solvent in nitrocellulose lacquers to retard evaporation and prevent blushing. *Partial Listing MISCELLANEOUS: Dry-cleaning fluid ingredient; solvent in furniture polishes, shoe creams and floor waxes.

MITAL: Degreasing agent; solvent in

GENERAL ADVANTAGES

metal polishes.

"Hexalin" cyclohexanol is a good solvent for several classes of dyes including basic, chrome, some acid and the majority of acetate rayon dyes.

"Hexalin" does not dissolve cellulose nitrate, cellulose acetate, rubber, copal, dammar, or elemi.

To obtain full information on Du Pont "Hexalin," just mail the coupon below, or write on your letterhead today.



Which of these other chemicals are you interested in?

- ☐ Adipic Acid
- ☐ Crystal Urea
- ☐ Diglycolic Acid
- ☐ Hytrol ® O Cyclohexanor
- ☐ Lorol ® Fatty Alcohols
 ☐ Methanol

E. I. du Pont de Nemours & Co. (Inc.)
Polychemicals Dept. 5811, Wilmington 98, Del.
Please and me full information on Du Pont

Please send me full information on Du Pont "Hexalin" Cyclohexanol. I am particularly interested in using "Hexalin" for the following applications:

	Good Continu		and tolow
Name_	The second	Position	83
Firm	645		100
Address_	1 3-5 3		012.0
City		State	

Nonionic surface-actives don't foam in solution, exhibit synergism . . .

trio's thermal stability is high

Uses: In combination with other surface-active agents, give improved wetting characteristics. Other applications include pigment dispersion in emulsion paints, viscosity reduction of vinyl plastisols and of aqueous gum systems, and foam suppression.

Features: The agents give less foam in aqueous solutions than any agents yet known. They also exhibit a strong synergism in combination with other surface-active agents, and their thermal stability is high.

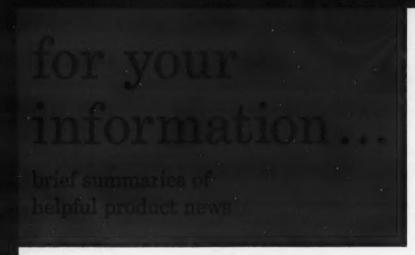
Though solids, they may be dissolved in a variety of organic solvents such as ethylene glycol or alcohols, giving concentrated stock solutions for ease of handling.

Description: The Surfynols are ditertiary acetylenic glycols, with general structure:

Three nonionic surface-active agents are available, and have these physical properties:

		Surfynol
		82
Per cent active		100
Appearance		white,
		cryst.
Melting point (°C)		48-50
Boiling point (°C)		222
Molecular wt range		<170
Solubility in water (wt % @ 20°C)		
(cloudy solns)		10.5
Surfynol		Surfynol
102	-	104
100	-	100
White		white.
powder		waxy
61-63		37-38
253		260
170-230		>230
1.3		0.12

These compounds are not in themselves good emulsifying agents. Used with other agents at optimum



Giant glass-lined reactor proves advantages of fire-resistant Aroclor 1248 heat-transfer fluid

Monsanto heat-transfer medium specified

The Argus Chemical Company, Brooklyn, N. Y., has installed a giant reactor to produce heat and light stabilizers for vinyl chloride plastic. The system utilizes Aroclor* 1248, Monsanto's fire-resistant, liquid-phase, heat-transfer fluid.

The 3500-gallon, glass-lined kettle—largest of its kind in the United States—has an automatic, pressureless system which operates at temperatures up to 550° F.

With Aroclor 1248 used for both heating and cooling operations, there is maximum protection against the type of fire hazard inherent in other systems. Aroclor 1248 is designed for operation at atmospheric pressure; it has a boiling point sufficiently above 600° F. to maintain a liquid condition at all times. The material possesses viscosities which permit pumping at room temperatures.

Aroclor 1248 offers important advantages

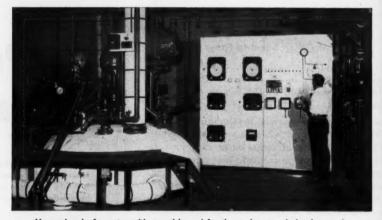
As a fire-resistant, heat-transfer medium, Aroclor 1248, a chlorinated

biphenyl, offers chemical processors these critical benefits:

- Stability against heat.
- An adequate safety margin to accommodate accidental overheating.
- Reduced corrosive action.
- Controlled vaporization loss.
- Freedom from toxicity hazard in properly enclosed systems.

Send for informative bulletin today

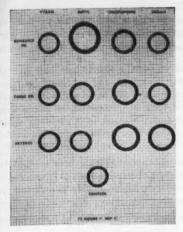
For more information about Aroclor 1248 as a heat-transfer fluid, write for Monsanto's Technical Bulletin No. O-P-130. This bulletin describes the physical properties of Aroclor 1248 and illustrates the design and operation of typical heaters.



Upper level of reactor with panel board for thermal system in background.



Specially designed glass-lined kettle has 3500 gallon capacity.



Vyram O-rings (vertical column, far left) show no signs of swell or distortion even after prolonged immersion tests.

New elastomer highly resistant to hydraulic fluids and many solvents

Monsanto's Vyram* is a remarkable synthetic elastomer which resists the swelling action of both synthetic and petroleum-base hydraulic fluids and lubricants.

Proved by extensive tests, Vyram has demonstrated its ability to withstand the chemical action of a variety of solvents and other fluids.

Comprehensive immersion data on Vyram in alcohols, aldehydes, amines, esters, ether, glycols, hydrocarbons, ketones, oils, substituted hydrocarbons and functional fluids are presented in a new technical bulletin just issued on Vyram.

Also included in the bulletin are physical properties, compounding data, processing information and a summary of properties imparted by various curative systems.

If you manufacture elastomeric seals, Vyram may be just the material you've been looking for. For technical information, check the coupon and mail today.

New bulletin on insect killer Methyl Parathion available

One of the industry's most effective insecticides, Monsanto's Methyl Parathion, offers formulators an important addition to their line.

Described in detail in a bulletin just issued are these facts about Methyl Parathion: product characteristics and features, registrations for use (at USDA and state levels); precautions for handling, and important formulation information.

Order your copy today.

Latest information on bulk tank storage of plasticizers ready

Production people handling plasticizers will find important information in Monsanto's newly revised, 16-page bulletin, "The Bulk Tank Storage of Plasticizers."

Topics covered in this illustrated bulletin: materials of construction particularly useful in setting up bulk tank storage units, storage tanks, pipe lines, pumps and filters, tank car and truck unloading, safety precautions, etc.

Write Monsanto for your copy.

More coatings and adhesives uses forecast for Santolite MHP

Santolite MHP gives specialized properties to adhesives and coating formulators using cellulosics, polyamides and most vinyl resins.

A water-white sulfonamide-formaldehyde condensation resin, Santolite MHP is widely used to give polyvinyl acetate adhesives quick tack. Usually compounded with a liquid plasticizer like Santicizer 160, dibutyl phthalate or with a mixture of these plasticizers and triphenyl phosphate, it forms a tough but flexible adhesive for bonding cellophane to cellophane, aluminum foil to paper.

In coatings such as nitrocellulose lacquers, Santolite MHP is used extensively for a greater degree of clarity, gloss, heat sealability, oiland moisture-resistance.

Because of its wide range of compatibility and its strong solvent power, Santolite MHP is a standard component for use with cellulose acetate to increase that resin's retentivity for other plasticizers and resins.

Let us send you more information about Santolite MHP and its companion resin, Santolite MS-80%. Just check coupon.

*Reg. U. S. Pat. Off.



MONSANTO CHEMICAL COMPANY 810 North 12th Street, St. Louis 1, Mo.

Please send me the items checked below:

- Aroclor 1248 Heat Transfer Fluid, Tech. Bul. No. O-P-130.
- Vyram Synthetic Elastomer, Tech. Bul. No. ODB-55-21
- Methyl Parathion, Tech. Bul. No. O-55

The Bulk Tank Storage of Plasticizers
Tech. Bul. No. 0-69

Santolite MHP and MS-80%, Tech. Bul. No. O-94

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ompany	

11/55

Street.....

City......Zone.....State......

concentrations, however, they increase emulsification.

(Nonionic surface-active agents are products of Air Reduction Chemical Co., a Div. of Air Reduction Co., Inc., Dept. CP, 60 E. 42nd St., New York 17, N.Y. Check CP 1775 on form opposite last page.)

Isocyanate foaming resin . . .

requires no steam-lines, molds, heat, or pressure

Uses: As thermal insulation, acoustical insulation, fillers for cavities and voids, and a shock-proof packaging material for fragile items. It should also find application in pontoons, life rafts.

Features: One outstanding feature is that no steam lines, molds, heat, or pressure are required to foam the plastic. Resin and catalyst are premixed through special metering equipment. Mixture leaves blending nozzle, expands within the area to the final foamed resin.

Physical properties and adhesion are typical of the isocyanates.

Description: Isothane comes as a two-packaged system of isocyanate foaming resins. It has these specs:

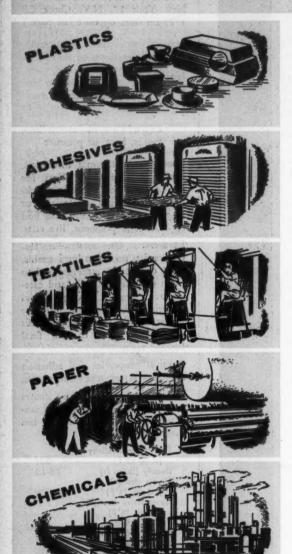
Thermal conductivity	
(K @ 75°F)	0.21
Density (lb/cu ft)	2.0-2.2
Tensile strength	
(psi @ 75°F)	30
Compressive strength	
(psi @ 75°F)	
10% deflection	5.0
25% deflection	6.0
Practical service temp	
(°F, constant) -8	0 to +180

(Isothane is a product of Surface Chemicals, Inc., a Div. of The McKay Co., Dept. CP, 1101 Thompson Ave., McKees Rocks, Pa. . . or for more information check CP 1776 opposite last page.)



For more information on product at left, specify CP 1777
. . . see information request blank opposite last page.

Heyden FORMALDEHYDE helps in Industry's BIG JOBS...



It is interesting to note that further growth is predicted for the major products made from Formaldehyde. This applies, for instance, to phenolic molding and laminating resins-urea and melamine resins for textiles, paper and plywood—and various organic chemicals.

Heyden Formaldehyde is helping in this growth, as it has right from the original development of these products. Experience, gained through this long association with customer problems, has enabled Heyden to meet the most exacting needs of each use. As new applications arise, Formaldehyde with the proper specifications will be available from Heyden.

Both methanol-inhibited (N.F.) and methanolfree forms of Formaldehyde are supplied by Heyden. If this chemical is one of your raw materials, why not discuss your requirements with the Heyden sales office nearest you.

HEXAMETHYLENETETRAMINE PARAFORMALDEHYDE

EYDE CHEMICAL CORPORATION

Chicago • Cincinnati • Detroit • Philadelphia • Providence • San Francisco



rde - Benzoic Acids - Benzyl Chieride - Beta-Oxynaphibelc Acid - Chieroteluenes - Creeceles - Fermaidehyde - Fermic Acid - Gual shydroxybenzeeles - Pentaerythriteis - Propyl Galiate - Resorcinel - Sallcylates - Sallcylic Acid - Sedium Benzoate - Sedium Fermate

When inquiring check CP 1778 opposite last page

Overcomes problem of dispersing hard-to-mix rubber accelerators

Problem of dispersing such materials as GMF, dibenzo-GMF, red lead, and sublimed litharge in rubber compounds is overcome with aid of recently available material. Accelerators are completely wetted out and dispersed in a resinous vehicle. Dispersion is superior to that which can be obtained in a masterbatch on a two-roll mill.

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Accelerators are protected from moisture and CO. There is no toxic or explosive dust. Dispersion can be introduced into batch quickly and at low temperatures, so that heat history is cut to a minimum. (Kenmix dispersions are product of Kenrich Corp.,

Dept. CP, 57-02 48th St., Maspeth 78, N. Y. . . . or check CP 1779 opposite last page.)

Makes effective internal lubricant, anti-blocking agent for vinyl and other resins . . .

synthetic wax also gives slip-, mar-resistance in lacquers without affecting color

In the vinyl and paint industries as a plastic lubricant and anti-blocking agent, antitack agent in adhesives, in lacquers and baked-on insulating varnishes, and as an extender or substitute for carnauba wax in mold release compounds.

Features: Wax makes an effective internal lubricant and anti-blocking agent for vinyl sheeting, rigid vinyls and other resins. Wax remains in fine suspension during processing. It migrates to surface, providing a smooth, glossy finish.

In lacquers it imparts slip and mar resistance and won't affect color. It also helps give a marproof, protective glossy coating with baked-on insulating varnishes.

Description: Advawax 280 is a hard, high melting synthetic wax resembling carnauba in appearance. Insoluble in water and alcohol, it is soluble in hot naphtha, toluene, and most organics. It is miscible with most fats and waxes when both are hot. Off-white in color, wax comes as very fine beads, and has these properties:

Melting range (°F)	280-290
Acid value (max)	10
Flash point (°F)	545
Fire point (°F)	580
Dielectric strength (vpm)	430
Insulation resistance (@ 25°C,	
megohms)	68,000
Oxidation potential (mv)	450
Power factor (@ 1000 cy)	0.028

(Synthetic wax is a product of Advance Solvents & Chemical Corp., Dept. CP, 245 Fifth Ave., New York 16, N.Y. Check CP 1780 opposite last page.)

Color-forming diazonium compound for use in paper chromatography added to line of chemicals . . .

nine other organic chemicals also introduced

p-Nitrobenzenediazonium fluoborate, a color-forming diazonium compound for use in paper chromatography has been added to manufacturer's line of over 3500 organic chemicals. The fluoborate salt is a stabilized form.

Also added is 3-hydrazinoquinoline dihydrochloride, which provides hydrazine activity on a quinoline base and is made stable by conversion to a salt.

Quinoxaline, prototype compound of an extensive ring system, is also being introduced.

Others are

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Benzyl succinate monosodium salt (Pract.), C_6H_5 - CH_2 OCOCH $_2$ CH $_2$ COONa.

3,4-Dinitrobenzoic acid (mp 165-167°C), (NO $_2$) $_2\text{-}$ C $_6\text{H}_3\text{COOH}.$

1,1-Diphenyl-2-thiourea (dec. at 219°C), $(C_6H_5)_2\text{-}NCSNH_2.$

Ethyl phenylundecanoate (bp: 137-139°C), $C_6H_5C_{10}$. $H_{20}COOC_2H_5$.

p-Hydroxyvalerophenone (mp: 62-64°C), HOC₆-H₄CO(CH₂)₃CH₃.

1,2,3,4-Tetrahydro-6-methoxyquinoline (mp: 40-42°C), CH₃OC₆H₃NHCH₂CH₂CH₂.

Trimethylphenylammonium benzenesulfonate (Pract.) mp: 192-194°C), $C_6H_5N(CH_3)_3OSO_2-C_6H_5$.

(Organic chemicals are products of Distillation Products Industries, a Sub. of Eastman Kodak Co., Dept. CP, 343 State St., Rochester 3, N.Y.... or for more information check CP 1781 opposite last page.)

Offers free-flowing granular form of anhydrous caffeine . . .

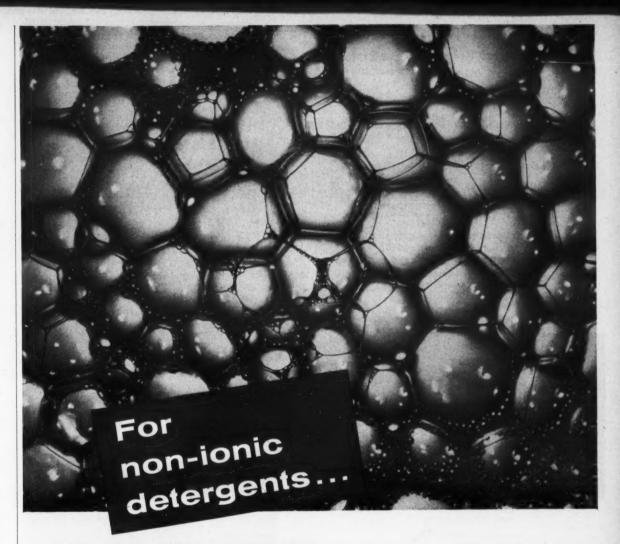
compound is denser and virtually non-dusting

Uses: In formulations for remedies for headache, neuralgia, and colds, and as an ingredient in some types of carbonated beverages.

Features: Because it is denser, less bulk is required in formulations; handling and production are speeded because of its free-flowing properties. Its non-dusting qualities reduce manufacturing loss.

Description: Free-flowing fine granular form of anhydrous caffeine, USP, is packed in 5, 25, and 100-lb drums.

(Granular anhydrous caffeine is a product of Chas. Pfizer & Co., Inc., Dept. CP, 630 Flushing Ave., Brooklyn 6, N.Y. Check CP 1782 opp. last page.)



USE NITROGEN DIVISION

Ethylene Oxide



Prepare non-ionic detergents by using high purity Nitrogen Division Ethylene Oxide. For reactions with such chemicals as alkyl phenols, aliphatic alcohols and fatty acids, the high purity of Nitrogen Division's Ethylene Oxide is your assurance of excellent results and a high quality product.

For information and a bibliography of pertinent literature, write for "The Manufacture of Non-Ionic Detergents from Ethylene Oxide". Ask too for samples, quotations and technical assistance.

NITROGEN DIVISION

ALLIED CHEMICAL & DYE CORPORATION 40 Rector Street, New York 6, N. Y.

Hopewell, Va. . Ironton, Ohio . Orange, Tex. . Omaha, Neb.



Ammonia Liquor
Ammonium Sulfate
Sodium Nitrate
Methanol
Ethanolamines
Ethylene Oxide
Ethylene Glycols
Urea
Formaldehyde
Nitrogen Tetroxide
U.F. Concentrate—85
Nitrogen Solutions
Fertilizers &
Feed Supplements

Anhydrous Ammonia

When inquiring check CP 1783 opposite last page

VG



Tetrasodium Pyrophosphate NHYDROU

Sodium Polyphos

(SODIUM HEXAMETAPHOSPHATE)

Trisodium Phosphate



Sodium Phosphates BLOCKSON

alor producers of: SODIUM SILICOFLUORID

HYGRADE FERTILIZER

Trisodium Phosphate Chloringted

Disodium Phosphate

ANHYDROUS RYSTALLINE

Monosodium Phosphate

-ANHYDROUS MONOHYDRATE

Sodium Acid Pyrophosphate

BLOCKSON CHEMICAL COMPANY

Division of Olin Mathieson Chemical Corporation JOLIET, ILLINOIS

When inquiring check CP 1784 opposite last page

MATERIALS

Chemical can control penetration or decrease drying time of adhesives . . .

> viscosity of casein dispersion also permits direct use as adhesive

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Uses: Product can be used in applications where an alkaline solution of one part of casein in two parts of water can be added directly to the system. such as most latex and emulsion systems and some pigment dispersions. Its viscosity permits direct use as an adhesive. It may also be diluted with an unlimited amount of water or with as much as two parts of alcohol.

Features: Material is useful wherever a low water-to-casein solution is needed to control penetration or decrease drying time without loss of adhesive strength.

Description: Casein dispersion is effective in dispersing clays, fillers, and pigments. It is a highly efficient stabilizer of alkaline latices and emulsions and a strong complexing agent for heavy metals. In addition, it is a ready source of amino acids for cultures and nutrition experiments. Preserved with non-toxic Ethyl Parasept, product stores for a year at 50°F, for six months at 70°, and three months

(Casein dispersion is product of Chemical Div., The Borden Co., Dept. CP, 350 Madison Ave., New York 17, N. Y. . . . or for more information check CP 1785 on form opposite last page.)

No blistering or peeling in paints made with copolymer emulsion . . .

water resistance, wet scrub, and adhesion are improved

Emulsion was developed for formulating primers and sealers, interior paints, exterior masonry paints, and metal coatings.

Features: Material remains permanently flexible because there is no plasticizer to be lost through migration or volatilization. Coatings have exceptional wet scrub and adhesion to base surfaces, film integrity even at low temp, and water resistance that's effective as soon as paint drys. Paint won't blister or peel, is non-yellowing, free of objectionable odors, toxic or flammable solvents, and is alkali-resistant.

Description: Polyvinyl acetate copolymer emulsion allows moisture to pass through paint film.

(Vinac Flexbond 800 is a product of Colton Chemical Co., a Div. of Air Reduction Co., Inc., Dept. CP, 1545 E. 18th St., Cleveland 14, Ohio . . . or check CP 1786 opposite last page.)

Electrical insulation material can withstand temperatures up to 1000°F...

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performance due to use of synthetic mica rather than natural mica

This recently developed electrical insulation material can withstand the effects of radiation and 1000°F temperatures without losing its properties. Material, called Supramica ceramoplastic, consists



Test made at 1100°F demonstrates superior deformation resistance of material made with synthetic mica

of pulverized synthetic mica bonded with highgrade electrical glass. The exceptional performance at high temperatures is due to the use of synthetic mica rather than natural mica.

Product also provides total and permanent dimensional stability, low electrical loss, and good arc resistance. Material is impervious to water, oil, and organic solvents.

(Supramica ceramoplastic insulating material is a product of Mycalex Corporation of America, Dept. CP, Box 311, Clifton, N.J. . . . or for more information check CP 1787 on form opposite last page.)

The theory and technique of using ion exchange resins as catalysts

Increased yields, less by-product formation, safer operation, and reduced costs are among the list of advantages given in 18-page study on use of ion exchange resins as catalysts for many types of organic reactions. Reactions such as hydrolysis, condensation and addition reactions, esterification, dehydrohalogenation, dehydration, ammonalysis, alcoholysis, an ester interchange are described. History, and theory are given in detail as well as conditioning and catalysis procedures. Nine pages of tables and a ninety-three-entry bibliography are included.

Bul S-800 is issued by Ion Exchange Div., National Aluminate Corp., Dept. CP, 6216 West 66th Place, Chicago 38, Ill. When inquiring check CP 1788 on form which is located opposite last page.

PETRONATE

(Reg. U. S. Pat. Office

... the oil-soluble petroleum sulfonate for all four major functions . . .

- A Emulsification and Dispersion of Liquids
- **B** Dispersion and Wetting of Solids
- C Wetting and Dispersion of Liquid-Solid Systems
- D Inhibition of Rust and Corrosion

PETRONATE is the general trade name given by Sonneborn to its various types and grades of oil-soluble petroleum sulfonates.

The chart suggests the broad range of uses for this material. A laboratory sample of PETRONATE will

help you determine how its many advantages can be put to efficient use in your manufacturing processes.

Check the coupon below indicating the use intended so that we can send you the proper type of PETRONATE.

USES OF PETRONATE

PRIMARY FUNCTION OF PETRONATE SECONDARY FUNCTION **APPLICATION** EMULSIFICATION AND DISPERSION OF LIQUIDS 1. Insecticide Emulsions **Emulsifying Agent for Toxicant** Spreading Agent 2. Textile Oils Emulsifying Agent for Textile Processing Oils Wetting and Dispersing Agent for Textile Fibers 3. Leather Oils Emulsifying Agent for Leather Processing Oils Wetting and Dispersing Agent for Leathers DISPERSION AND WETTING OF SOLIDS 4. Rubber Manufacture Thermo Plasticizing Agent Increases Dispersibility of Filler 5. Fuel Oil Keens Sludge in Suspension Prevents Segregation of Moisture 6. Printing Ink Manufacture Aids dispersion of pigment Reduces Viscosity of Ink 7. Ore Flotation Flotation Reagent Selective Wetting Agent 8. Additives for Lube Oil Acts as Detergent Inhibits Bearing Corrosion WETTING AND DISPERSION OF LIQUID-SOLID SYSTEMS 9. Crude Oil Emulsion Splitting Reverting Agent for Water-in-Oil Emulsions Aids in Wetting out Salts and Solids 10. Emulsifiable Solvent Cleaners Dispersing Agent for Oil and Grease Deposits Acts as Emulsifying Agent 11. Dry Cleaning Compounds Linking agent for Water and Solvent Loosens Dirt Absorbed by Fabric 12. Fat Splitting Process Dispersing Agent for Solid Fats Acts as Wetting Agent INHIBITION OF RUST AND CORROSION 13. Corrosion Preventive Compounds Rust and Corrosion Inhibiting Agent Acta as Moisture Barrier Rust and Corrosion Inhibiting Agent Aids in Dispersion of Scale 14. Anti-Freeze Solutions 15. Soluble Cutting Oils Emulsifying Agent for Mineral Oil

L. SONNEBORN SONS, INC.

New York 10, N.Y.

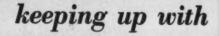
White Oil and Petrolatum Division, L. SONNEBORN SONS, INC. 300 Fourth Avenue, New York 10, N. Y.

Please send sample of PETRONATE suitable for use indicated below (circle number corresponding to use in chart above).

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Company			
Address			14 4
City	P.O. Zone	State	

When inquiring check CP 1789 opposite last page







SEAWOLF'S HEART MPS MOLTEN SODIUM

> IN THE ATOMIC SUBMARINE SEAWOLF, LIQUID SODIUM IS THE MEDIUM FOR TRANSFERRING THE HEAT OF ATOMIC FISSION FROM REACTOR TO BOILER WHICH SUPPLIES STEAM FOR THE TURBINE. SODIUM ADVANTAGES:

- . EXCELLENT HEAT CONDUCTION
- . NO CORROSION OF STEEL
- . GOOD ELECTRICAL CONDUCTION PERMITTING CIRCU-LATION BY A MAGNETIC PUMP WITH NO MOVING PARTS
- . HIGH BOILING POINT, SO THERE IS NO NEED FOR PRES-SURIZED SYSTEM

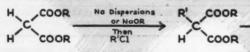
THIS APPLICATION UTILIZES SODIUM'S PHYSICAL PROPERTIES MOST SODIUM APPLICATIONS TAKE ADVANTAGE OF ITS HIGH CHEMICAL ACTIVITY.

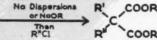
and Fine Antimalarials Chemicals: Antipyretics Antihistamines Vitamin B1

START WITH SODIUM ...

IN THE PRODUCTION OF MANY DRUGS AND FINE SODIUM ALCOHOLATES ARE COMMONLY USED IN CHEMICALS, SUCH REACTIONS AS ALKYLATION, CONDENSATION, OR REDUCTION ARE OFTEN USED. FOR EXAMPLE, IN MAKING BARBITURATES, THE ACTIVE HYDROGENS OF A MALONIC ESTER ARE FIRST REPLACED BY SODIUM, AND EVENTU-ALLY BY AN ORGANIC RADICAL (SEE EQUATION).

THIS REACTION. IT IS ALSO. POSSIBLE IN MANY CASES TO USE SODIUM DISPERSIONS IN PLACE OF THE ALCOHOLATE, DISPERSIONS WITH PARTICLE SIZE OF THE ORDER OF 15 MICRONS ARE EASY TO PREPARE, AND CAN BE USED OVER A WIDE RANGE OF TEMPERATURES (-80°C TO 400°C.)





LCOHOL PLUS SODIUM...

SEND FOR U.S.I. BROCHURE ON SODIUM-SEE .S. I. FOR HELP ON YOUR SODIUM REACTIONS

DUSTRIAL CHEMICALS CO.

Division of National Distillers Products Corporation 99 Park Avenue, New York 16, N. Y. Branches in principal cities

ALCOHOLATES SUCH AS SODIUM ETHYLATE OR METHYLATE CAN BE PURCHASED, OR THE MANUFACTURER CAN PREPARE THEM HIM-SELF BY ADDING SODIUM BRICKS OR A STREAM OF LIQUID SODIUM TO AN EXCESS OF ALCOHOL IN A NITROGEN PURGED REACTOR. WHERE ALCOHOL-FREE ALCOHOLATES ARE REQUIRED, THEY CAN EASILY BE PREPARED FROM SODIUM DISPERSIONS. DETAILS ARE AVAILABLE ON REQUEST FROM U.S.I.

When inquiring check CP 1790 opposite last page

Stability offered by compound serving as raw material. intermediate, catalyst

2-Hydroxyethyltrimethylammonium bicarbonate in 44-46% ag. soln. has low toxicity

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Uses: As a raw material for numerous syntheses, as an intermediate in making various choline salts, and as an alkaline catalyst such as in manufacture of resins and other polymers. It shows promise in preparing surface-active agents.

The solution as supplied is quite sta-Features: ble at ordinary temperatures when stored in a full and sealed container. On exposure to air or on heating, solution loses CO2 and becomes strongly alkaline as the carbonate salt content is increased. A pH of over 14 can be reached by heating to temperatures around 150°F. Further heating results in decomposition of the more alkaline choline compound so that, when used as a catalyst, the final alkalinity can be reduced by heat alone, if desired.

The chemical provides a convenient starting point for preparation of other salts. Treatment of the bicarbonate with acids that are stronger than carbonic gives a double decomposition reaction:

HOCH₂CH₂N(CH₃)₃ · HCO₃ + HX ---> HOCH2CH2N(CH3)3 + H2O + CO24

Description: 2-Hydroxyethyltrimethylammonium bicarbonate is an industrial grade salt consisting of a mixture of the carbonate and bicarbonate. It is supplied as a 44-46% aqueous solution with these specifications:

Sp gr (25°/25°C)	1.098-1.101
Color (APHA, max)	25
Residue on ignition (% max)	0.01
Sediment	none
pH(max)	11.0
Fe (% max)	0.005

Other physical properties:

Molecular weight (calc.)	165.19
Freezing point (°C)	-21.3
Refractive index (np35)	1.3967
Viscosity (cp @ 25°C)	3.50

Compound has a low order of oral toxicity. If solution is heated and evaporated, it becomes progressively more strongly alkaline and as the free base appears, it becomes corrosive to skin. It should be handled with the precautions usually observed when handling NaOH. Since it will slowly attack uncoated iron, copper, and aluminum, these should be avoided during storage as they may cause subsequent discoloration.

(2-Hydroxyethyltrimethylammonium bicarbonate is a product of Petrochemical Div., Commercial Solvents Corp., Dept. CP, 260 Madison Ave., New York 16, N.Y. Check CP 1791 opposite last page.)

Polyethylene glycols are compatible, easily blended . . .

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compounds are clear, odorless, and almost colorless

Uses: As chemical intermediates, especially in the preparation of nonionic surface-active agents used in detergents which are not precipitated by hard water nor decomposed by mild acids. They also find use as solvents, in resins, pharmaceuticals, textiles, and printing inks.

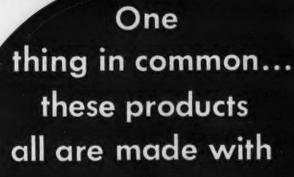
Features: The glycols can be blended readily with themselves and a wide variety of other materials. Their compatibility makes possible formulation of products having the desired viscosity and humectant properties. Compounds are clear, odorless, and almost colorless. They undergo typical alcohol reactions.

Description: Poly-G polyethlene glycols are heat-stable, hydroscopic, and of low vapor pressure. Solubility is complete in water, keytones, alcohols, esters, and aromatic hydrocarbons. Specifications are:

		Poly-G 200			
Avg. Molecu	190-210				
Sp gr (25/2	1.122-1.127				
Color (APH	5, max)	50			
Acidity (as	acetic acid, ma	x) 0.05			
	as NaOH, me				
	JS @ 210°F)	39-43			
Ash (%, ma:	x)	10.0			
Poly-G 300	Poly-G 400	Poly-G 600			
285-315	380-420	570-630			
1.122-1.127	1.124-1.130	1.124-1.130			
50	50	50			
0.05	0.05	0.05 0.05			
0.05	0.05				
43-47	47-54	59-66			
0.01	0.01	0.01			

(Polyethylene glycols are products of Industrial Chemicals Division, Olin Mathieson Chemical Corp., Dept. CP, Baltimore 3, Md. . . . or for more information reader may simply check CP 1792 on form which is located opposite last page.)

For more information on product at right, specify CP 1793
. . . see information request blank opposite last page.



Chemicals!

This conveyer is purely imaginary. For no one plant, no single industry turns out all the products made with Witco chemicals.

Witco's 14 plants supply a variety of industries with raw materials for finished products ranging from fine lacquers to automobile tires... from heavy-duty greases to pharmaceuticals.

Through 35 years of growth, Witco has constantly expanded manufacturing facilities and increased product lines to serve more and more industries. The work of the Witco laboratories has branched out, too — taking on new assignments and providing helpful technical service to customers.

We invite you to call on the nearest Witco office for prompt attention to your chemical orders.

Witco products

Stearates
Driers
Ester-Plasticizers
Vinyl Stabilizers
Fungicides
Mildewproofing Agents
Gelling Agents
Asphaltic Products
Carbon Blacks
Rubber Chemicals
Surface Active Agents
and many other quality chemicals



35 years of growth

WITCO CHEMICAL COMPANY

122 East 42nd Street, New York 17, N. Y.

Chicago • Boston • Akron-Cleveland • Atlanta Houston • Los Angeles • San Francisco London and Manchester, England





Amide content of 90-95% in alkylolamide non-ionic . . .

has increased thickening, foam stabilizing properties

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Uses: For use in shampoos, dishwashing detergents, laundering compounds, and the like.

Features: By increasing the amide content of the alkylolamide detergent, foam stabilizing and thickening properties have been increased.

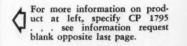
Description: By a low-temperature catalytic process, the amide content of the non-ionic detergent has been increased to about 90-95%.

(Ninol "Extra" alkylolamide series is product of Ninol Laboratories, Inc., Dept. CP, 1719 S. Clinton St., Chicago 16, Ill. . . . or for more information reader may simply check CP 1794 on form opposite last page.)

Let's get acquainted with rare chemicals' registry

Designed to acquaint people with the Armour Research Foundation in one of its numerous public services—the National Registry of Rare Chemicals, six-page folder lists services and how to obtain them. The registry keeps track of rare chemicals as a free service for scientists and others seeking compounds they cannot locate at regular supply houses.

"An Introduction to The National Registry of Rare Chemicals" is issued by Armour Research Foundation of Illinois Institute of Technology, Dept. CP, 10 W. 35th St., Chicago 16, Ill.





See what you can do with the new textiles

They're weaving magic into modern textiles. Today, fabrics can be made stronger or softer, cooler or warmer, tougher or lighter, shrinkproof, mothproof, fireproof, waterproof, and almost foolproof. While it would be difficult to predict what the textiles of tomorrow will be like, one thing is certain—chemicals will make an even greater contribution to their improvement.

Working closely with textile manufacturers and finishers, Olin Mathieson offers invaluable assistance through a long-range program of coordinated planning and production. This assures the availability of chemical raw materials regardless of changing market conditions; assures adequate chemical production to supply growing industrial capacity; speeds the development of new

chemical products and processes; provides greater flexibility in shipping and handling of materials; provides the personal attention of recognized product experts backed by widely diversified research facilities.

Currently, a growing number of chemical consumers are coordinating their planning and production with Olin Mathieson...America's prime producer of basic industrial chemicals. Olin Mathieson's long experience and familiarity with the broad market picture will prove invaluable in your planning. Why not consult with us now?

MATHIESON CHEMICALS

OLIN MATHIESON CHEMICAL CORPORATION
INDUSTRIAL CHEMICALS DIVISION . BALTIMORE 3. MD.

3300



INORGANIC CHEMICALS: Ammonia · Bicarbonate of Soda · Carbon Dioxide · Caushic Soda · Chlorine · Hydrazine and Derivatives · Hypochlorite Products · Mitrate of Sode · Nitric Acid · Soda Ash · Sodium Chlorite Products · Sulphate of Alumina · Sulphur (Processed) · Sulphuric Acid ORGANIC CHEMICALS: Ethylene Oxide · Ethylene Glycols · Polyethylene Glycols · Glycol Ether Solvents · Ethylene Dichloride · Dichloroethylether Fermaldehyde · Methanal · Sodium Methylate · Hexamine · Ethylene Diamine · Polyamines · Ethanolamines · Trichlorophenol · Trichlorobenzene

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Acetonedicarboxylic acid: multipurpose molecule . . .

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high purity form is noted for its stability

Uses: In preparation of pharmaceuticals, insecticides, disinfectants, fungicides, dyestuffs, chelating agents, amino acids, leavening agents, and as a chemical intermediate.

Features: The multipurpose molecule reacts at its carbonyl group, carboxyl groups, and progressively at the active methylene groups. In addition, it condenses with many compounds to form oxygen- and nitrogen-containing heterocyclics.

Compound and its esters form chelates with Cu and Fe, and higher esters may have use in sequestering heavy metals in fats, oils, and petroleum products.

The high purity form that is now made available has improved stability, both in shipment and on the shelf.

Description: Acetonedicarboxylic acid (ADA) is derived from fermentation-produced citric acid. It is readily soluble in water and alcohol, and melts at 135°C (with decomposition). Its formula is: (HOOCCH₂)CO(CH₂COOH). Mw is 146.10.

(Acetonedicarboxylic acid is a product of Chemical Sales Div., Chas. Pfizer & Co., Inc., Dept. CP, 630 Flushing Ave., Brooklyn 6, N.Y. . . . or for more information check CP 1796 on form opposite last page.)

Special surface treatment of sulfur promotes rapid blending . . .

good in compounding polymers that are difficult to break down and mix

Uses: Sulfur is used in compounding polymers.

Features: Special surface treatment promotes more rapid blending during rubber compounding and greatly reduces "dusting" and attendant hazards from static-induced fires. Materials treated are especially good in compounding polymers that are difficult to break down and mix.

Description: Sulfurs are surface-conditioned by a process which is a departure from the MgCO₃ treatment which has been standard in the past. Grade 21-13 is a 93-95% through 325-mesh material and 21-14 is a finer grade, passing 98% through 325 mesh.

(Tire-Brand surface-conditioned sulfurs are a product of Stauffer Chemical Co., Dept. CP, 380 Madison Ave., New York 17, N. Y. . . . or for more information check CP 1797 on form opposite last page.)

EXON: each resin engineered for a specific problem





Waste no more time on grinding
— Exon 654 never needs it! Even
when simple stirring equipment is used,
Firestone's plastisol resin readily dis-

perses in plasticizer.

It's an extremely fine powder with high molecular weight, created to impart excellent heat and light stability, physical toughness and chemical stability to your products. Slush molders particularly will appreciate the exceptional viscosity, stability and flow properties of pastes formulated from Exon 654. These pastes are unsurpassed for processing ease. They gell quickly. And they always coat the mold smoothly and evenly.

Whatever your particular problem, you're likely to find the specific remedy among Firestone's many Exon resins.



For complete information or technical service on the entire line of Exon resins, call or write today.

CHEMICAL SALES DIVISION

FIRESTONE PLASTICS COMPANY, POTTSTOWN, PA., DEPT. 8W DIVISION OF FIRESTONE TIRE & RUBBER CO.

When inquiring check CP 1798 opposite last page

FAMOUS LIGHTHOUSES OF AMERICA



PICEON POINT LIGHTHOUSE is located on the Coastal Highway

5 miles south of Pescadere, California. Constructed in 1872, its 115-foot white
masonry tower stands on a rocky headland that for many years
has been a landmark for ships approaching the Golden Gate from the
south. Pigeon Point and the lighthouse are named for the ship

Carrier Pigeon, one of the many that came to grief on the outlying rocks
in the years before the beacon was built.

Safe Guides to quality in electrochemicals are Niagara Alkali Company's skill and experience in production and its modern facilities for quality control. Put your trust in Nialk® Liquid Chlorine, Nialk Caustic Potash, Nialk Carbonate of Potash, Nialk Paradichlorobenzene, Nialk Caustic Soda, Nialk TRICHLORethylene, Niagathal® (Tetrachloro Phthalic Anhydride).

ALKALI COMPANY

60 East 42nd Street

New York 17, N.Y.

MATERIALS

Discover resin acid

opens up new field for naval stores chemists

A new resin acid, called palustric acid, has been discovered in pine gum. Discovery of the acid and information on its properties and behavior opens a new field of knowledge to the naval stores chemists. Information may be important in extending the utilization of rosin.

Isolation of palustric acid gives a much better understanding of the reactions of gum and rosin. Acid has been identified as an intermediate in heat and acid isomerization of levopimaric acid to levo-abietic acid. Information obtained in study should be of interest to producers and consumers of rosin.

(Courtesy of US Department of Agriculture. Further information concerning research on palustric acid may be obtained from E. L. Patton, Head, Naval Stores Station, Olustee, Florida.)

Argonne produces ergot in radioactive form . . .

will be of important use in medical studies

Ergot, a parasitic fungus in which the valuable muscle contracting drugs ergotamine and ergonovine are made, has been produced in a radioactive form at Argonne National Laboratory as the result of a cooperative research study with the University of Connecticut. Radioactive ergot and the radioactive drugs or alkaloids which will be extracted from it will be used in important medical and pharmaceutical studies.

(Courtesy of Argonne National Laboratory, PO Box 299, Lemont, Illinois.)



For more information on product at left, specify CP 1799
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Expansible polyisocyanate resin and catalyst for producing polyurethane foams . . .

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cellular material has strength, good adhesion and insulating properties

Polyurethane foams with excellent adhesion for most surfaces, high strength, good insulating properties, and great resistance to vibration can be produced with manufacturer's polyisocyanate resin and catalyst. Foam is produced by mixing the resin and catalyst in correct proportions. Mixed ingredients can then be applied by spraying or pouring and will foam in place.

Resin is a viscous, amber-colored liquid, having the consistency and appearance of honey. Catalyst is a clear, mildly basic, aqueous liquid, which has the consistency and appearance of water. When mixed, resin reacts with catalyst, forming carbon dioxide gas and a high molecular weight polymer. Carbon dioxide is trapped, producing a stable polyurethane foam. In addition to advantages already mentioned, foamed resin is light in weight, has low thermal conductivity, good fire resistance, chemical and solvent resistance, and superior load-carrying capacity.

(Polyisocyanate resin and catalyst for producing polyurethane foams is product of Chase Chemical Corp., Dept. CP, 3527 Smallman St., Pittsburgh 1, Pa. Check CP 1800 opposite last page.)

Carnauba wax emulsion is mold release agent for many elastomers . . .

it is uniform and has a minimum percentage of inactive ingredients

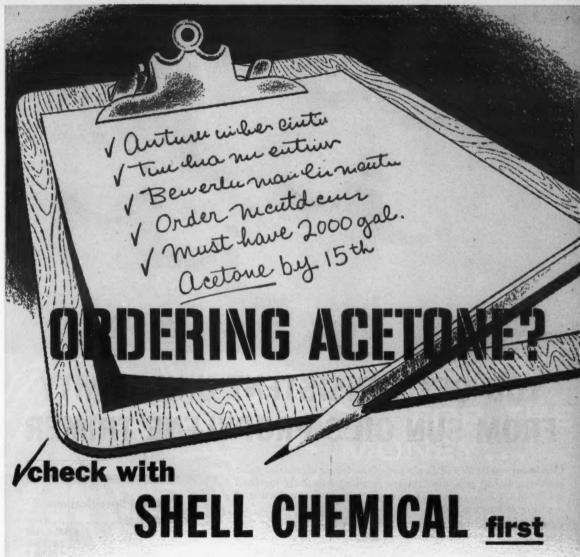
Uses: As a mold lubricant, parting agent, release agent, or wax coating for plaster and wood molds. It can be used on rubber, synthetic elastomers, polyesters, polyurethanes, epoxy resins, and phenolics.

Features: Wax emulsion is uniform and has a minimum of inactive materials.

Description: Carnauba wax emu!sion has a solids content of 12%: 80% of this is carnauba wax; 20% is emulsifier of the soap type. Ash comprises 6% of solids.

pH of emulsion is 8.5. It is stable to heat (at least 150 hr @ 70°C), freezing (stable to 2 freeze-thaw cycles), and storage (shelf stability is one year minimum).

(Carnauba wax emulsion is a product of International Products Corp., Dept. CP, PO Box 118, Trenton 1, N. J. . . . or for more information check CP 1801 on form opposite last page.)



Strategically located bulk depots assure prompt deliveries. Save money on multi-solvent shipments via compartment tank cars and trucks

When you make Shell Chemical your headquarters for acetone and other solvents, you automatically have fewer supply worries.

You need never give *purity* a second thought, because Shell Chemical maintains quality-control standards that are among the industry's highest—all the way from the plant to your door.

You will find, too, that Shell Chemical is a dependable source, whether your needs are reckoned in drums or tank cars. Bulk storage depots are within convenient shipping range of every large

industrial center...as close as your 'phone!

And you can keep costs low by taking full advantage of bulk prices available through compartment tank car and truck deliveries. Order several solvents at a time, and watch costs go down!

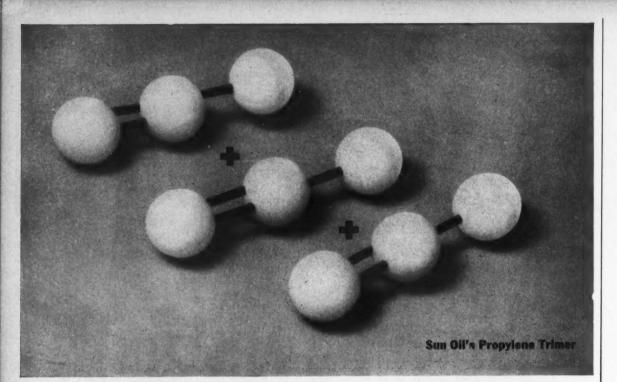
Place that next acetone order with Shell and you'll agree with thousands of other customers, small and large, that Shell is your dependable source! Write for the catalog SC:54-40 on Shell Chemical solvents.

SHELL CHEMICAL CORPORATION

CHEMICAL PARTNER OF INDUSTRY AND AGRICULTURE
380 Medison Avenue, New York 17, New York

Affanta - Boston - Chicago - Claveland - Deboit - Houston - Les Angeles - Nowark - New York - San Francisco - St. Louis Bi CANADA: Chemical Division, Shall Oli Comprisor of Canada, Limited - Manhoul - Toronto - Vancance

When inquiring check CP 1802 opposite last page



YOU GET CONSISTENT UNIFORMITY FROM SUN OIL'S PROPYLENE TRIMER

Consistent uniformity of Sun's propylene trimer eliminates color problems in end products...makes it give particularly excellent results in alkylation reaction with aryl groups in the production of synthetic detergents.

Of special interest to chemists in many other fields is the fact that butylenes are eliminated from Sun's propylene trimer. It is almost entirely mono-olefinic...averaging 99.5%. The distribution of the olefin types in propylene trimer is indicated as follows:

Terminal Olefins:

R-CH=CH2	5
R1 > C=CH2	12

Non-terminal Olefins:

R1>C=C <h2< th=""><th>(trans)</th><th>16</th></h2<>	(trans)	16
R1>C=C <r2< td=""><td></td><td>5</td></r2<>		5
R1 > C=C < R3		46

Remainder: 16
(Presumably tetra-substituted olefins)

For other information, see your Sun representative, or write for Technical Bulletin #20. Address

SUN OIL COMPANY, Philadelphia 3, Pa., Dept. CP-11.

INDUSTRIAL PRODUCTS DEPARTMENT

SUN OIL COMPANY, PHILADELPHIA 3, PA.

IN CANADA: SUN OIL COMPANY, LTD., TORONTO AND MONTREAL

Typical Specifications

API Gravity @ 60	F							5	7-61
Specific Gravity				0	.7	35	1-	0.7	7507
Distillation, 5%						2	65	F	min
95%						2	75	-3	05 F
Sulfur, wt, %						1	0.0)2	max
Bromine Number							1	35	min
Color, Saybolt .							-	21	min

SUN OIL IS A MAJOR PRODUCER OF:

Benzene • Toluene • Mixed Xylenes • Propylene Trimer and Tetramer • Sunaptic Acids (High Molecular Weight Naphthenic Acids) • Sulfonate WS (Water Soluble Sulfonate) • PDO-40 (Polymerized Drying Oil)



When inquiring check CP 1803 opposite last page

MATERIALS

High-speed wetting agents need only small amounts to do effective job . . .

find many applications in textile finishing

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Uses: As wetting out assistants and dye levellers in package and skein dyeing of cottons, rayons, and synthetics; assistants in finishing baths to promote penetration; penetrants and dispersing agents for vat dyes in pigment padding; rewetting agents for goods which are to be preshrunk or which are to be padded after drying.

Features: Only very small percentages are required: 0.025 to 1% on weight of goods is recommended for most operations. They have high speed action.

Description: Dexolene G, B, and MTV are composed of solutions of sodium dioctyl sulfosuccinate. They are readily soluble in hot or cold water and are stable in pH range from 5 to 9. pH of a 0.1% solution is 5. They should not be used under extreme acid or alkaline conditions. All three agents are compatible with anionic and non-ionic agents.

In exceptionally high-speed processing, Dexolene MTV prevents buildup of foam and is recommended for this type of work.

(Wetting and rewetting agents are products of Textile Chemical Div., Dexter Chemical Corp., Dept. CP, 819 Edgewater Rd., New York 59, N. Y. . . . or for more information check CP 1804 on form opposite last page.)

Develops synthetic rubber with physical properties similar to nature's own . . .

manufacturer is now in pilot-scale production

Patent rights, research data, and small experimental quantities of a synthetic rubber which promises to replace natural rubber in certain applications are being offered industry. Infrared and X-ray analyses show this synthetic is essentially the same as natural rubber. Tests show that physical properties at normal and elevated temperatures are equivalent to natural rubber.

The synthetic is easier to work with in the factory than GR-S because it is inherently tacky. It can be processed and fabricated without application of special processes or additional processing. Finished products have outstanding resistance to cracking, and tire tread wear is about equivalent to that of natural rubber.

(Natural-like synthetic rubber is a development of The Firestone Tire & Rubber Co., Dept. CP, 1200 Firestone Pkwy., Akron, Ohio.)

Meet bodying needs of wide range of coatings

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Two recently announced products meet the bodying requirements of a wide range of coating systems.

First material, Nuvis-1 is a liquid viscosity modifier which is used primarily to obtain non-thixotropic viscosity increase without affecting flow or leveling properties of the paint. It is used primarily in alkyd systems but is also effective in oleoresinous paints and vehicles and certain industrial finishes.

Second material, Nuvis-2, is a thixotropic bodying agent in powder form. It is used in gloss and semigloss enamels. It is also used in alkyd flats to improve brushing, prevent sagging, and retard pigment settling. Normally material is added as part of the pigment grind.

(Nuvis-1 and Nuvis-2 bodying agents are products of Nuodex Products Co., Inc., Div. of Heyden Chemical Corp., Dept. CP, 1 Virginia St., Newark, N. J. . . . or check CP 1805 opposite last page.)

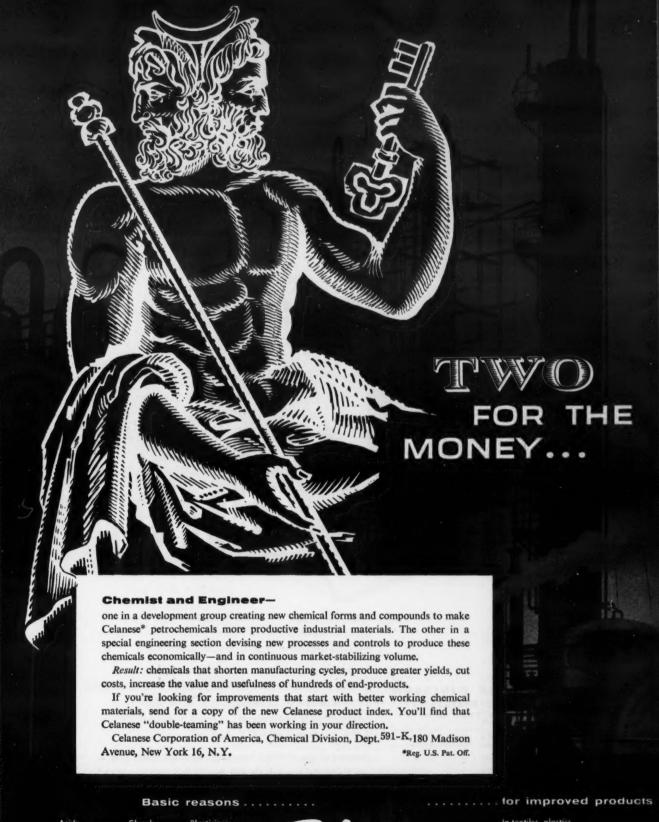
Indexed bibliography of vitamin E

Paper-covered 182-page book contains detailed abstracts of papers published on various aspects of vitamin E during 1952 to 1954 incl. Compiled by Harris and Kujawski at Distillation Products Industries' laboratories, the bibliography is broken down into seven sections. These include: Occurrence and Distribution, Determination, Chemistry, Nutrition and Metabolism.

Annotated Bibliography of Vitamin E, 1952-1954, Vol III is available by remitting \$3 direct to The National Vitamin Foundation, Inc., Dept. CP, 15 E. 58th St., New York 22, N. Y.

For more information on product at right, specify CP 1806
. . . see information request blank opposite last page.





Alcohols Aldehydes Anhydrides Glycols Hydraulic Fluids Ketones Oxides Polyols Plasticizers Salts Solvents Synthetic Oils Wnyl Monomers



In textiles, plastics, agriculture, paper, surface coatings, electrical and building materials and equipment, pharmaceuticals.



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ALLIED CHEMICAL & DYE CORPORATION
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Besten Providence Philadelphia Chicago San Francisco Portland, Oro. Groensboro Charlotto Richmond Atlanta Los Angelos Columbus, Ga. New Orleans Chattanooga Toronto



After only a year of commercial production, we are doubling the output of our Aniline plant at Moundsville to meet the demand of quality-minded Aniline users.

Made by a continuous catalytic hydrogenation process developed in National Aniline Laboratories, this aniline sets a new standard in the industry. It is water white . . . extremely pure and uniform . . . meets or exceeds the A.C.S. Specification for C.P. Aniline.

Because of our strategic location on the Ohio River you can be sure of dependable delivery by rail, truck or inland waterways. We will be pleased to furnish samples, specifications, price and delivery quotations.

MATERIALS

Strips off oxide coatings from aluminum surfaces at room temperatures . .

> disposal of exhausted compound is not a problem

Uses: For rapid chemical removal of oxide coatings on aluminum at room temperature.

Eeatures: Compound contains no ingredients that would make waste disposal a problem. It will not continue to react with bare aluminum as it contains an inorganic inhibitor to guard against this.

Description: Called Compound 89, stripper is a strongly alkaline powdered product. It is dissolved in water in proportions of 2 lb per gallon of final solution. Most anodized films are removed in less than one minute; coatings of "hardcoat" varieties having thicknesses up to 0.0025" may require 3 to 4 minutes. Temperatures above 100°F should not be used. Density of bath should be maintained above a sp gr of 1.224 at 70°F.

(Aluminum stripper is a product of Enthone, Inc., Dept. CP, 442 Elm St., New Haven, Conn. . . . or for more information check CP 1807 opposite last page.)

Silica pigments compared

Hi-Sil fine particle size silica pigments 101, 202, and 233 are compared as to their effects in natural and synthetic rubbers. Octavo-size bulletin has 16 pages, ten tables.

Hi-Sil Bul No. 6 is issued by Columbia-Southern Chemical Corp., Sub. of Pittsburgh Plate Glass Co., Dept. CP, One Gateway Center, Pittsburgh 22, Pa. When inquiring specify CP 1808 on form opposite last page.

For more information on product at left, specify CP 1809
. . . see information request blank opposite last page.

Refined polycyclic chemicals of high purity available in sample quantities . . .

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od-109 commercial quantities will be available by end of this year

Uses: Phenanthrene, fluoranthene, and pyrene are now used mainly in the preparation of dyestuffs and pharmaceuticals. Their use is being investigated as intermediate for pigments and rubber chemicals. They are also used to make fluorescent colors for oils and waxes.

Features: Forthcoming availability of these chemicals in high-purity form should stimulate research and development to take advantage of their unusual potentialities.

Description: High purity of the materials is illustrated by phenanthrene — it contains no carbazole, a troublesome impurity usually found in phenanthrene. The three high-purity aromatic chemicals are now available in sample quantities. It is anticipated that commercial quantities of all three will be available by the end of this year.

(Polycyclic chemicals, phenanthrene, fluoranthene, and pyrene are products of Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N. Y. Check CP 1810 opposite last page.)

Uniformity of polyethylene helps fabricators and molders...

material has low bulk factor, free flow, good coloring characteristics

Uses: Of two polyethylene formulations available at present, 900M is designed for injection molding, while PC-51 is for pipe extrusion. Under development and available soon are forumlations for film extrusion, blown bottles, wire coatings, and paper coating.

Features: Uniformity of the resin allows molder to make a finished product with both consistent physical properties and appearance. Also it allows fabricator to work under uniform operating conditions. Result is lower cost for molding and fewer rejects.

Description: Inherent properties of the polyethylene include uniform molecular weight distribution and a granulation with an optimum combination of low bulk factor, free flow, constant feed, and outstanding coloring characteristics.

(Polyethylene formulations 900M and PC-51 are products of The Dow Chemical Company, 1000 Main St., Midland, Mich. . . . or for more information check 1811 on form opposite last page.)

the NOPCO DIGEST

Short-short stories of Better Products, Improved Production Methods, Reduced Costs brought about by NOPCO CHEMICALS for PRODUCTION

LESS STATIC...
LESS DOWN-TIME
IN TEXTILE MILL



A New England producer of synthetic fibers had almost as much "down-time" as running time. They could not find a lubricant that would process these fibers. Tried new equipment; still no go. Nopco developed lubricants that gave the proper balance of fiber-to-fiber lubricity, fiber-to-fiber cohesion, antistatic control. The mill has had high production ever since.

YOU CAN CORRECT
A MISTAKE
WITH THIS COUPLING



A maker of transite pipe had long needed a coupling lubricant with a hard-to-find combination of properties. It had to be non-toxic—the pipe carries drinking water. It had to be water-soluble, so that the excess could be washed out. It had to retain its lubricating properties for an hour after the pipe is laid—so that it could be separated if the pipe was laid wrong! And it had to hold a constant viscosity in temperatures from below freezing to 140° F.

Several firms tried—the manufacturer has now standardized on KBE, the lubricant Nopco developed to meet his requirements.

PAPER MACHINE NO KIN TO LEOPARD



The fourdrinier machine in a Minnesota paper mill had to shut down and wait for help. Since they had shifted to a new sizing material that did the job they wanted on a fine grade of wallpaper, they found the paper was picking up spots caused by foam. Nopco technicians spent several days at the plant—after trying several Nopco defoamers, found the right combination. The high speed fourdrinier resumed operations. No more spots.

The case-histories briefly described here are recent examples of Nopco Chemicals for Production at work helping turn out improved products better, faster, cheaper

We realize that the problem you would most like to solve may be quite different from any of these. Nopco has a wealth of experience in many other fields as well—and has built its business by coming up with a high percentage of the right answers in improving other people's products. Why not call on our technical men to have a try at yours?

Nopco Chemical Company, 324 Davis St., Harrison, N. J.

Attention Research Men

A new Nopca chemical, a modified non-carrosive alkyl aryl polyether alcohol, with a low unchanging viscosity curve when diluted with water at 25°C.—we have been recommending as an excellent detergent for wool. We can see that its properties may easily make it useful in several other fields. If you would like a free testing sample for your own experiments, write us today.

Chemicals for Production



PLANTS: Harrison, N. J.
Cedartown, Ga. • Richmond, Califà
London, Ont. Canada

Nopco Processing Chemicals include: Esters, Ethylene Oxide Condensates, Amides, Metallic Soaps, Sulphonates, Emulsion Polymers, Foamed Plastics.

For: Lubrication • Detergency Sizing • Plasticising • Emulsi-FYING • DISPERSING • WETTING DEFOAMING • THICKENING.

When inquiring check CP 1812 opposite last page



Don't Let The Odor Imp Menace Your SALES EFFORTS!

DEODALL #1 has proved effective in commercial practice for masking solvent odors and the unpleasant scent of other petroleum products. *Deodall* #1 gives high performance at *low* cost in a wide variety of applications. Why not send us a sample of your product for laboratory study and recommendations.



330 West 42nd Street, New York 36, N. Y.

Branches: Philadelphia · Boston · Cincinnati · Detroit Chicago · Atlanta · Seattle · Los Angeles · Toronto

When inquiring check CP 1813 opposite last page

Save Time and Money on TOWER PACKINGS

Specify KNOX for initial installations as well as replacements



Triple Spiral ring

- KNOX produces porcelain tower packings from the same composition as is used for high voltage electric porcelains.
- Resists high temperatures, fumes, vapors, corrosion, liquids, alkalies and acids.
- Non-porous complete vitrification firing 2300°F provides zero porosity.
- Modern production techniques and over 30 years "know-how".
- Wide range of designs.
- Uniform quality.

If you're interested in Better Tower Packings at lower Operating Cost, we'll be glad to send more information, prices and samples on request.

Other additions to the popular KNOX line for the Chemical Industry









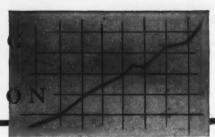


Cross-partition ring Single-partition ring Double Spiral ring

MANUFACTURED BY
KNOX PORCELAIN CORPORATION
KNOXVILLE 1. TENNESSEE

When inquiring check CP 1814 opposite last page

E X P A N D I N C H E M I C A L P R O D U C T I



Caustic-chlorine plant follows market to South

Solvay Process Division, Allied Chemical & Dye Corporation, is starting construction of a mercury cell chlorine-caustic soda plant at Brunswick, Ga. Plant will produce 100 tons of chlorine and 125 tons of caustic soda per day.

Solvay selected Brunswick because of its proximity to pulp and paper, textile and chemical plants now in production and planned for the southeastern states.

Hercules modernizing, expanding western dynamite plant

Hercules Powder Company will spend two million dollars in modernizing and expanding its Bacchus, Utah, dynamite plant. Project is part of plan to move dynamite production from Contra Costa County, California, to allow production of anhydrous ammonia and other chemicals at the company's plant there.

Transfer of explosives operations from California to Utah will be gradual. Completion is scheduled latter part of 1956.

\$3 million more invested in phthalic anhydride

A \$3 million plant will double Pittsburgh Coke & Chemical Company's phthalic anhydride output. Construction is already underway; production will start next fall.

Located on Neville Island, near Pittsburgh (Pa.), this plant is part of the continuing expansion program started in 1947. Total investment to date is \$34 million.

Reichhold spending \$800,000 for sulfuric plant

Reichhold Chemicals, Inc., will produce sulfuric acid for the first time next March upon completion of a 100 ton-a-day plant in Tuscaloosa, Ala. Plant will cost 800,000 and will be part of RCI's present Tuscaloosa facilities. Construction is being financed by the ten-million-dollar private loan Reichhold recently obtained. Acid will be used by the Tuscaloosa plant to increase its production of chemicals and synthetic resins from 200 to 300 million lb annually.

RCI is also opening a new plant in Kansas City, Kansas, for production of liquid and powdered phenolic resins. Actual production is expected to be under way by the end of 1955.

Mississippi River Chemical notes construction gains

Work at the Selma, Missouri plant site of Mississippi River Chemical Company's \$16 million ammonia works is progressing. Roads, sidings, and excavations have been completed. The 160-employe, 4600-acre plant will produce 200 tons of ammonia and 220 tons of nitric acid a day.

Eastman's octyl nearly ready

Shake-down operations are being completed at Texas Eastman Company in Longview, Texas. Tank-car quantities of octyl alcohol are just about ready for shipment. Product will be marketed as 2-ethylisohexanol — most abundant isomer in it.

News about chemical materials in the US plant construction, increased production . . . on stream now or planned for future

Short Dynel supply calls for boost

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With Dynel supply continuing about 35% short of its market, Carbide and Carbon Chemicals has approved an expansion program. Construction will start immediately. An addition to the existing plant at South Charleston will hike output the needed 35%. Increase should come in by February 1956.

New windshield plant shuns wraparounds

Pittsburgh Plate Glass has a new plant in production. Product will be out-of-date windshields. Run as a job shop, it will produce short runs for older cars.

Only medium rare

Rare earths are to become still more plentiful. Davison Chemical Company Division and Rare Earths, Inc., (of W. R. Grace & Co.) have a plant in operation at Pompton Plains. They are also installing additional facilities at Davison's Curtis Bay Works near Baltimore.

Aside from atomic applications, these materials are finding increased use in glass polishing, coloring and decorating, in carbon core arc lights, lighter flints, and as alloying metals.

Shell's rubber program still growing

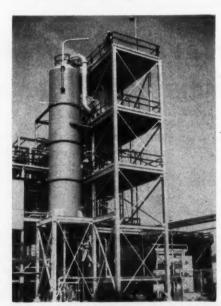
In line with growing activity in synthetic rubber, Shell Chemical has announced a manufacturing research unit for Torrance, Calif. Synthetic rubber, butadiene, styrene and related material will be studied.

Another anti-freeze supplier — Olin Mathieson

At a completed plant near Pittsburgh (Pa.), Olin Mathieson will soon be producing automotive anti-freeze and related products. Plant is leased from Penn Oil Works, Inc., who will run plant under contract.

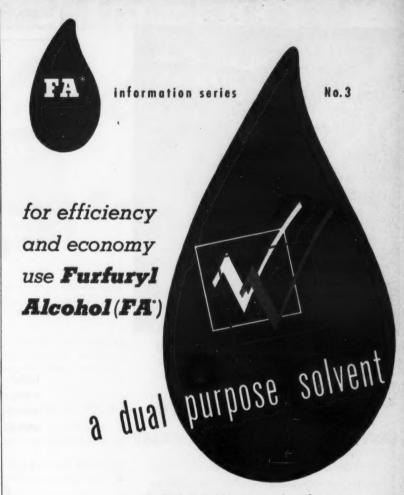
While capacity figures are not given, factory has 68,000 feet of floor space, and a 2 million gallon tank farm is included.

Boost cold rubber output - in line with demand



Painters finish up an 80-foot tower to support latex concentration tank at Firestone

To keep up with increased cold rubber demand, The Firestone Tire & Rubber Company is installing additional facilities. Refrigeration and latex concentration equipment is being added.



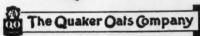
Furfuryl alcohol is a strong solvent for many synthetic resins. In a number of cases it offers the important added advantage of subsequently reacting with the resins and becoming an integral part of the final cured product.

In one instance furfuryl alcohol plays this dual role with a urea-formaldehyde resin resulting in a more flexible and versatile adhesive.

In other cases furfuryl alcohol is a reactive solvent with phenol-aldehyde resins, as for example in the manufacture of resinoid abrasive wheels. Up to 95% of the FA added to the wheel may be reacted. Where FA does not react with a particular resin, similar results may be achieved in the blend by resinifying FA with acidic catalysts.

Your inquiries about FA are invited. Send for Bulletin 205 on Furfuryl Alcohol.

*Reg. U.S. Pat. Off.

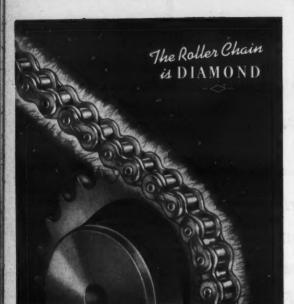


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In Australia: Swift & Company, Pty., Ltd., Sydney — In Japan: F. Kanematsu & Company Ltd., Tokyo

When inquiring check CP 1815 opposite last page



How to select

chains for use where corrosive conditions exist

For power transfer and conveying movements on equipment used in industries like food and beverage, chemical, pharmaceutical, pulp and paper, etc., Diamond corrosion-resistant Roller Chains are in wide usage.

These Chains made of stainless steel and bronze incorporate the same Diamond uniform high quality, long-life performance—and positive non-slip operation.

DIAMOND CHAIN COMPANY, Inc.

Dopt. 411, 402 Kentucky Avenue, Indianapolis 7, Indiana

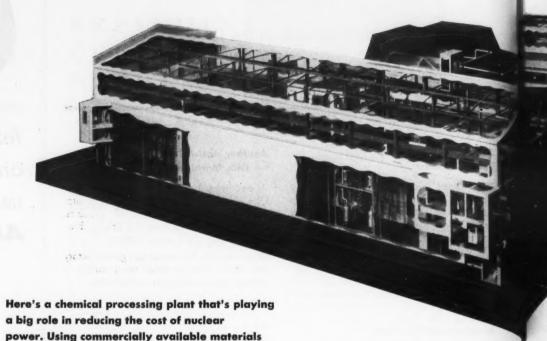
Offices and Distributors in All Principal Cities

Pages 104 to 110 from catalog 649 include tables on how to select chain to meet hundreds of varying conditions created by the presence of corrosive agents. Copies on request.



When inquiring check CP 1816 opposite last page

ideas — from other industries and the AEC . . . new trends in research, processes, services



recovers unburned uranium from used fuel elements

Simple design eliminates need for expensive remote-handling maintenance equipment

Among the requirements for producing economic electrical power from nuclear reactors is that the valuable unconsumed fissionable material be recovered. It is impossible to completely burn up the fissionable material from the fuel elements in a nuclear reactor because of the build-up of fission-product poisons and radiation damage to the elements.

and direct maintenance it . . .

At the recent International Conference on Peaceful Uses of Atomic Energy, held at the Palais de Nations in Geneva, Switzerland, a simplified model of the Idaho Chemical Processing Plant (ICPP) for reclaiming unconsumed fissionable material, was exhibited by the US. The plant, which uses commercially available materials, is operated by Phillips Petroleum Company for the US Atomic Energy Com-

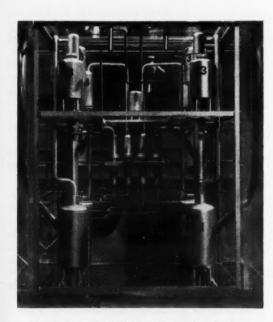
mission, and is located at the National Reactor Testing Station, Idaho Falls, Idaho.

Process consists of three main steps: 1) dissolution of the intensely radioactive uranium-aluminum fuel elements in nitric acid, 2) adjustment of the dissolver solution to a composition suitable for solvent extraction, and 3) separation of the uranium from the aluminum, fission products, and trans-uranic elements with which it is associated in the fuel elements. Separation is accomplished by continuous liquid-liquid extraction using methyl isobutyl ketone as the solvent.

Remaining after separation are quantities of waste solutions containing the radioactive fission products (Continued on page 66)

NO

General view of simplified model of the ICPP. Building in foreground is mein process building. On upper level are supply reservoirs for process chemicals



Model of a cell containing equipment for dissolving used fuel elements. Chutes at each side carry elements into dissolvers (1). After dissolution, neutralization of excess acidity is made in tanks (2). Solution is filtered in (3) final pH adjustment is made in (4)

Complete "Line-to-Load" Mortol and Protection

Type H Starters

FOR 2300 TO 5000

FOR POLT MOTORS

in ONE Compact Unit

THE Allis-Chalmers Type H high voltage starter is a complete control unit. Everything needed for efficient motor control and positive protection is engineered into one easy-to-install cubicle.

Control functions, varying with specific job applications, include full or reduced-voltage starting, acceleration, speed control, reversing or non-reversing, and dynamic braking.

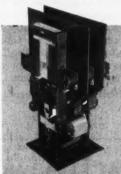
A few of the many protective features

Current-Limiting Fuses clear short circuit in less than ½ cycle...long before short can damage contactor or motor.

Overload Thermal Relay adjusts for ambient temperatures . . . trips only on motor overload. Allows use of maximum capacity.

Time-Delay Undervoltage Relay permits restarting if power is restored within its setting.

Compartmented Enclosures isolate high voltages. Dead front construction and electrical interlock on fuse compartment provide additional personnel protection.



Choice of Air or Oil Contactors



For complete information, see your Allis-Chalmers representative, or write Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for Bulletin 14B6410B.

A-4580



ALLIS-CHALMERS

When inquiring check CP 1817 opposite last page



This Filter Paid For Itself In \mathbf{ONE} MONTH!

After watching a Niagara Vertical Filter in operation at a competitive plant, the Mississippi Chemical Corporation, Yazoo City, Miss., immediately purchased their own unit. It is used for filtering ammonium nitrate solutions for the removal of foreign materials before reprocessing. Unless filtered out, these foreign materials would present a serious explosion hazard. Mississippi Chemical Corporation tells us their Niagara more than paid for itself in the first month of operation by permitting the salvaging of materials that previously had been sold at a considerable reduction below market price.

W. B. Dunwoody, general operations manager, said: "We are also very pleased with the simplicity of the unit and the ease with which it can be cleaned without interruption to our process." Operating and cleaning a Niagara rarely takes more than part of one man's time-even with several filters in operation. The stainless steel leaves require no cloth bags,

so there are none to remove, wash, replace . . . or pay for.

This is no isolated case. Niagara Filters are saving money in hundreds of processing plants handling products running the gamut from aluminum acetate to zinc chloride solutions. Niagaras give positive removal of solids to almost any degree desired-flow rates two to five times greater than those of cloth-covered presses-and no messy floors or fume and drippage loss as they are fully enclosed, vapor tight.

Your Niagara Filter, either vertical or horizontal, can be selected from a wide range of capacities up to 40,000 G.P.M. It can be made of any corrosion-resistant material that can be fabricated by normal shop methods and can be rubber or plastic lined, steel jacketed or insulated. Pressures to 75 PSI are standard but yours can be built for pressures up to 280 PSI-all construction meeting ASME requirements.

For more details on Niagara Filters, mail the coupon today.

Niagara FILTERS

American Machine and Metals, Inc.

a Send Catalog No. CP1155	☐ Have representative call
Name and title	
Company	
Address	
Cim :	Zona Susa

Underground crusher station excavated by blasthole method . . .

> procedure cuts construction time by two months

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By adopting the blasthole mining method to excavate a giant underground crusher station, International Nickel Company of Canada was able to save more than two months' construction time. The huge chamber, located at Levack Mine in the Sudbury District of Ontario, is on the 2650-ft level, and is big enough to hold two average-size eight-room houses.

The crusher station, concreted throughout, required an opening 70 ft high, 26 ft wide, and 68 ft at its longest point.

A raise seven ft by 11 ft first was driven from the loading pocket at 2826-ft level up to the base of rail on 2650-ft level, then a drift seven ft by seven ft was opened from No. 2 shaft station to connect with the raise. The full dimensions of the crusher station at the base of rail were silled out by square setting.

After a second cut, the back was roof-bolted and heavy steel ceiling beams were installed. With the square sets as a working platform, concrete was poured for the roof and walls, after which the sets were removed. Then, with longhole tungsten carbide, the part of the crusher station below the 2650-ft base of rail was all drilled off. About 175 holes were required, varying in depth from 10 to 49 ft. Drilling totalled more than 5600 ft.

As slashing into the raise progressed, the excess broken rock was pulled directly into the skips at the 2825-ft level loading pocket. When blasting was completed, the entire opening for the station below base of rail was filled with broken rock. As the level of the

For more information on product at left, specify CP 1818
... see information request blank opposite last page.

muck was pulled down, using a slusher when required, steel beams were installed for the first and second floors of the station. Finally, the balance of the broken rock was drawn off from the opening and the walls were concreted.

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(Information courtesy of The International Nickel Company, Inc., Dept. CP, 67 Wall Street, New York 5, New York.)

Annealing facilities offered on contract basis

As part of its service to industry, American Silver Company is making available strand annealing facilities for the job annealing of metal strip. Facilities can be contracted for continuous annealing of non-ferrous metals, precious metals, nickel alloys, and other materials—wherever conformity of temper and bright finish is required.

(Strand annealing facilities are available from American Silver Company, Dept. CP, 36-07 Prince Street, Flushing 54, New York... or for more information check CP 1819 on form opposite last page.)

Outlines engineering, construction services

Available engineering and construction services for chemical plants are described in eight-page illustrated booklet. Services outlined range from preliminary surveys to initial operation of process plants. Applications include fats and oils, petrochemicals, fertilizers, nuclear development, and others.

Bul 2505 is issued by Chemical Plants Division, Blaw-Knox Company, Dept. CP, Farmers Bank Building, Pittsburgh, Pa. When inquiring specify CP 1820 on form opposite last page.

For more information on product at right, specify CP 1821
. . . see information request blank opposite last page.



How to find the

best centrifugal speeds for your products

Determining the most efficient centrifuging speeds can help you lower manufacturing costs and increase production. For only the *right* speeds will make the proper degree of separation in the shortest time.

Tolhurst's "all-speed" hydraulic drive helps you establish the best basket speeds for loading, extracting, washing and unloading. You can select any speed from 0 to maximum RPM. Your tests show you which speed performs each operation most efficiently.

Or, do you have the problem of processing many different materials that have dissimilar filtering and washing characteristics? With "all-speed" drive, you can process them all in the same Tolhurst Centrifugal.

You simply turn a handwheel to change speed. A tachometer indicates basket speed at all times. "All-speed" drive is now available on any Tolhurst Centrifugal. Baskets are 12" up to 108" in diameter and can be perforate or imperforate. Construction can be of steel, steel rubber covered, monel or other corrosion-resistant materials. For full information, write for illustrated catalogs.

FREE CENTRIFUGING CALCULATOR—A new slide rule for quickly calculating centrifugal force is yours for the asking.

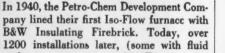
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Specialists in Liquid-Solids Separation



outlet temperatures over 1600F) not a single furnace has ever been shut down because of the need for refractory maintenance.

Long life is just one reason furnace builders, as well as furnace operators, insist on B&W IFB. Here are four more:

CUT INSTALLATION COSTS

B&W Insulating Firebrick are easy to install. They can be cut, drilled or shaped on the job with ordinary woodworking tools. Their lightness makes them easy to handle.

ELIMINATE EXPENSIVE ALLOYS

Because of their high insulating values, B&W Insulating Firebrick can be supported or anchored with ordinary carbon steel. Expensive, heat-resisting alloys are not necessary.

REDUCE DOWN-TIME

These brick have low heat storage, cool off quickly. This makes possible quick access to the furnace for inspection. They heat up quickly to get back on the line, too.

CLOSE TEMPERATURE CONTROL

Due to the low heat-storage capacity of B&W IFB, their hot-face temperature responds quickly to changes in the rate of heat input to the furnace—insuring the closest possible temperature control.

You, too, can profit by this four-way economy of B&W Insulating Firebrick. Ask your B&W representative for all the facts on these cost-cutting refractories. He'll be glad to discuss your refractory problems with you.

BABCOCK

& WILCOX

THE BARCOCK & WILCOX CO.

REFRACTORIES DIVISION

WORKS: AUGUSTA, GA.

BAW REFRACTORIES PRODUCTS.—BAW Allmul Firebrick • BAW 80 Firebrick • BAW Junior Firebrick • BAW Insulating Firebrick
BAW Refractory Castables, Plantics and Mortans • OTHER BAW PRODUCTS.—Stationary & Marine Boilers and Component Equipment...
Chemical Recovery Units... Seamless & Welded Tubes... Pulverizers... Fuel Burning Equipment... Pressure Vessels... Alloy Castings

Petro-Chem Development Company Reports:

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No Shutdowns

for Refractories

Maintenance

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FISSIONABLES RECOVERY

(Continued from page 62)



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Portion of model showing two 300,000-gal tanks used for storage of radioactive wastes (22). Heat generated by the radioactive contents is so great that cooling water must be circulated through them

and other materials. Liquid waste is concentrated to minimum volume and jetted directly to 300,-000-gal stainless steel permanent storage tanks enclosed in concrete vaults buried under 10 ft of earth. The fission product heat in some of these tanks is high enough that submerged stainless steel coils and a reflux condenser have to be provided for cooling purposes. Gaseous wastes are discharged directly to atmosphere through a 250-ft stack after filtration through Fiberglas beds and dilution with the building ventilation air.

Outstanding feature of the ICPP is that it is the first designed for direct, rather than remote, removal or repair of the process equipment. Radioactive material can be readily washed out of the pipes and tanks so that workers can handle them directly.

Equipment is of simple mechanical design for easy decontamination and repair, and contains a minimum of moving parts. Critical items, such as transfer jets, valves, and pumps, are installed in pairs, or alternate transfer routes are provided so that failure of one piece of equipment will not require a process shutdown for repair. Much of the equipment with a high maintenance potential, such as diaphragm-metering pumps and samplers, has been placed in lead-shielded cubicles outside the concrete walled process cells.

All equipment is leak-tested and operated on simulated process solutions before actual radioactive processing operations begin. Stainless steel liners and spray nozzles are provided in the process cells to facilitate external decontamination. The direct-maintenance system permits a maximum amount of equipment to be placed in each cell since no provision has to be made for removal by remote methods. Ladders and platforms are provided in many cells to permit access to otherwise hard-to-reach equipment.

(Information courtesy Atomic Energy Division, Phillips Petroleum Co., Dept. CP, Idaho Falls, Idaho.)

When inquiring check CP 1822 opposite last page

3 NEW AAF PRODUCTS

now at work in Chemical Plant Dust Control

AMERclone Dry Centrifugal Collector designed to handle large exhaust volumes containing dry, granular dust in large concentrations. Strictly a product of AAF research, AMERclone offers many features new to dry centrifugal design that result in these important advantages—

High Collection Efficiency. AMERclone offers collection efficiencies equal to or better than any centrifugal unit available today.

Requires Less Space. The fact that a single AMERclone tube, 4" in diameter, has a cleaning capacity of 333 cfm as compared to a 100 to 150 cfm rating for conventional units makes for important space savings.

Less Subject to Abrasion. Abrasion resistance qualities are greatly increased with the use of thick wall gray iron castings, plus the fact that in AMERclone operation there is no recirculation of dust load to increase abrasive effect.

Maintains Efficiency. Collection efficiency of the AMERclone remains practically constant over a wide range of exhaust volumes with the compensating feature of the secondary air circuit.

For complete AMERclone data, write for AAF Bulletin No. 291.







AMERiet Fabric Arrester designed to handle extremely fine particles or collect material dry for reclaiming. Like all AAF Dust Control Products, AMERiet offers these basic features: (1) small space requirements; (2) maintained performance over a wide range of operating conditions; (3) constant exhaust volume; (4) high collection efficiency.

For complete AMERjet data, write for Bulletin No. 279.

- 3 Design 4 Type N ROTO-CLONE Hydro-Static Collector

 —A new version of AAF's famous Hydro-static precipitator which, in addition to the proven high efficiency cleaning action of its inverted S-shape water curtain, now offers—

 DESIGN 4 TY
 - Improved and simplified entrainment separators to further reduce unit's low maintenance costs.
 - Addition of 4 larger sizes to permit handling of exhaust volumes up to 50,000 cfm.
 - Improved water level control maintains performance under extremes in operating conditions.

For complete Type N data, write us for AAF Bulletin No. 277.

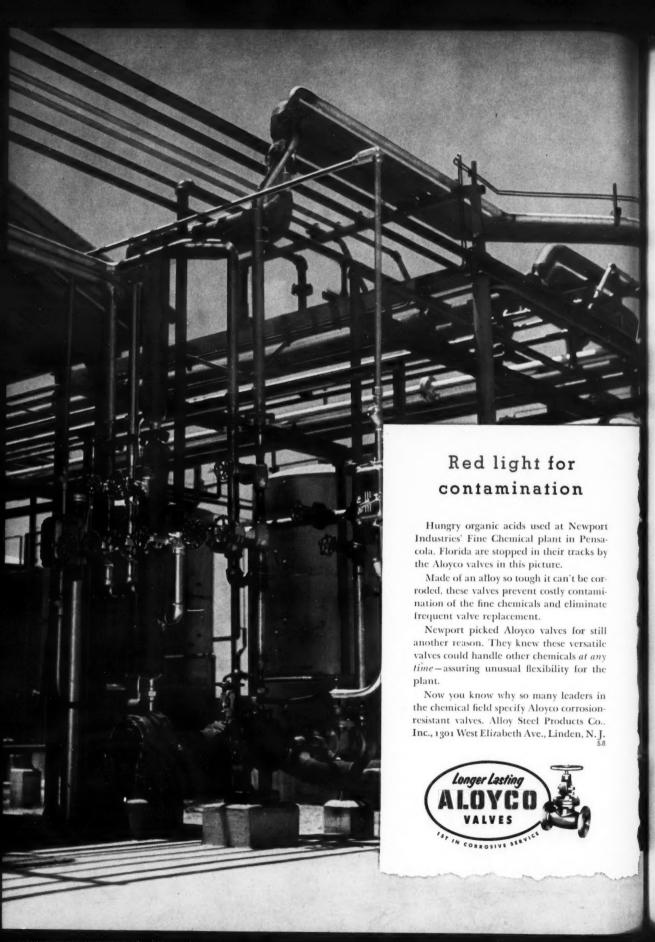




American Air Filter

American Air Filter of Canada, Ltd., Montreal, P. Q. • 258 Central Avenue, Louisville 8, Kentucky

When inquiring check CP 1823 opposite last page



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See Aloyco Valves at CHEMICAL SHOW Booth 35

Aloyco Valves like those opposite will star at the CHEMICAL SHOW. They'll be on display - along with Aloyco Valves for every type of corrosive service-at the ALLOY STEEL PRODUCTS Booth. And an Aloyco representative will be on hand to show you how you can put them to work tackling corrosion in your plant.

Even if you can't make the show, you can still get all the information you need on Aloyco Valves from one of Aloyco's distributors or sales offices. Just write or call at the address below that's nearest YOU. ALLOY STEEL PRODUCTS COMPANY, INC., 1302 West Elizabeth Ave., Linden, New Jersey.

SALES OFFICES

Atlanta, Georgia 76 Fourth St., N.W. Buffalo 14, New York 3053 Main Street Chicago 4, Illinois McCormick Bldg 332 S. Michigan Ave. Los Angeles 22, Calif.

1238 S. Atlantic Blvd.

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Ardun Supply Company 303 S. Frankfort St., Tulsa

K. E. Luger Company P. O. Box 6704, Houston 5

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2453 Sixth Avenue, South, Seattle 4 In Canada

Railway & Power Engineering Corp., Ltd.

EXPORT OFFICE

Frederick von Raab P. O. Box 350, Port Washington, N. Y.



When inquiring check CP 1824 opposite last page

TWA saves an estimated \$14,000/yr with ultrasonic cleaners . . .

units reduce labor costs as much as 75 per cent, solvent costs 98 per cent

Ultrasonic cleaning units used for cleaning armatures and precision parts at Trans World Airlines, Inc., are expected to save the company an estimated \$14,-000 during the first year of installation. The units have achieved 100 per cent cleaning effectiveness, reduced direct labor costs as much as 75 per cent, and have in many cases cut solvent costs as much as 98 per cent.

Armatures and field poles with former resistance readings of 200,000 ohms or lower are cleaned by a five-minute cleaning cycle that increases resistance to megohms and infinity. Intricate instrument mechanisms can be cleaned without disassembling them, which reduces maintenance time by more than 60 per cent. Pump, carburetor, and fuel system components - including valves and injector nozzles that involve time-consuming hand cleaning - can be cleaned in batches with greater consistency and cleaner parts.

Basically, a complete ultrasonic unit consists of two parts: a cabinet which houses a generator of highpower electrical energy, and transducer or cleaning unit which holds the cleaning solution and also converts the electrical energy into high-frequency sound.

Unit operates by transmitting high-frequency sound waves through a water detergent solution to achieve high penetration of ultrasonic energy on the part to be cleaned. The cleaning solution literally wraps itself around the part - penetrating areas which resist all other methods of industrial cleaning.

A 12-inch-diameter model has a liquid capacity of 20 quarts; nine-inch model, nine quarts; and fourinch model, one quart. They have a power output of 2000, 800, and 200 watts, respectively.

(Ultrasonic cleaners are product of Bendix Aviation Corporation, Dept. CP, Pioneer Central Div., 2710 Hickory Grove Road, Davenport, Iowa . . . or check CP 1825 on form opposite last page.)

Basic statistics cover Los Angeles area

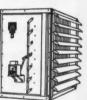
Basic statistics of the Los Angeles area are presented in 74-page report. Pertinent data on population, area, transportation, rubbish disposal, and natural gas are included. Report is part of overall program pertaining to air pollution research program for the area.

To obtain Report No. 6, "Basic Statistics of the Los Angeles Area" remit \$3.50 direct to Air Pollution Foundation, Dept. CP, 704 S. Spring Street, Los Angeles, California. When inquiring specify CP 1826 on form opposite last page.



Why?

- They deliver fresh air at desired temperatures at all seasons of the year.
- Cannot freeze. Temperature variation is attained by varying amount of incoming air passed over heating coilsnot by varying the volume of steam.



HORIZONTAL TYPE WING FRESH AIR SUPPLY HEATER

- Air passed over heating coils and air by-passed mix uniformly-no hot and cold streams
- No expensive duct work required. Discharge outlets (fixed or revolving) distribute tempered fresh air uniformly.
- May be installed in roof or monitor openings or in side wall or window openings.

Write for a copy of new bulletin. Use the coupon.

L. J. Wing Mfg. Co. 179 Vreeland Mills Road, Linden, N. J.

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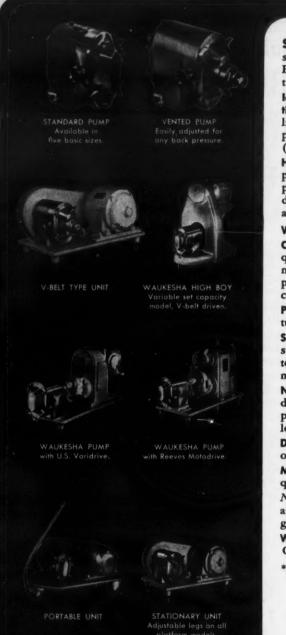
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City	Zone	State





When inquiring check CP 1827 opposite last page

IS PUMPING COPPOSIVE Solutions A PROBLEM IN YOUR PLANT



SOLUTION—If so, select an all-purpose, corrosion-resistant Waukesha P.D.* Sanitary Pump. Furthermore, no product damage...no aeration...no pulsation...but smooth product flow!

Ideal for pumping these typical corrosive solutions—acetate solvents, ammonia chloride, aniline dyes, barium chloride, butyric acid, calcium phosphate, chlorinated water, copper sulphate (water solution), stearic acid, tartaric acid, toluol.

Handles equally well these materials—starch paste, alcohol, cold creams, pharmaceutical products, synthetic hormones, cellulose, film dope, ink, lard, liquors, paints and varnishes, adhesives, syrups, molasses.

Why WAUKESHA

Corrosion-Resistant—Pump fabricated from required corrosion-resistant metal to meet your needs: metal does not react chemically with product—protects pump from wear...does not contaminate product.

Positive Displacement—Provides a smooth, virtually non-pulsating positive flow.

Sanitary—Quick and easy to disassemble, clean, sterilize, and reassemble. No recesses. No hard to get at crevices. Smooth, highly polished metal surfaces.

No Leakage—Using a John Crane Rotary Seal, designed to completely seal out air and completely seal your product in, reduces your pump leakage problems to a minimum.

Dependable—Quality construction. Trouble-free operation. Low maintenance expense.

Many Satisfied Users—Names supplied upon request for your review.

Note: Inlet and outlet ports from 1" to 3" diameter. Delivery capacities from 1/10 to 100 gal. per min.

Write For Full Information — Waukesha Foundry Company, Dept. 11 P, Waukesha, Wisconsin.

*Positive Displacement

Maukesha Foundry Company

WAUKESHA—the Forward Look in Pumps. Yesterday, Waukesha Pioneered the Sanitary P.D. Pump. Today, Waukesha Pioneers the Improvements.

with halogen fluoride cutting tool

Oil well tube cut quickly

Chemical ejected under pressure reacts with metal at points of contact

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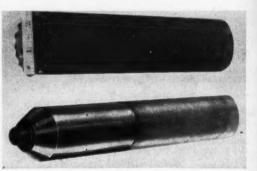
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A chemical cutting tool has been perfected which is capable of cutting metal tubing cleanly and instantaneously at depths ranging from several hundred feet to more than two miles beneath the surface. Believed to be the first big non-military use of halogen fluorides, the tool uses the tremendous potential energy bound up in the compound to perform the task.

The chemical is contained in a heavy-walled cylinder equipped with a pressurizing chamber and firing head. Assembly is lowered into the tubing and is accurately positioned at point where cutting



Sample of 2" tubing (top) cut by chemical cutting tool. Cutter's head (note orifices) is shown at bottom

is to be done. Upon electrical impulse, chemical is ejected through appropriately spaced orifices in the cylinder against inner wall of the tube. The chemical, under enormous pressure, penetrates the wall in a fraction of a second.

By changing the placing of the openings, the tool makes a clean cut, with none of the objectionable flaring produced by conventional explosive methods. It also perforates a smooth, burrless hole. The chemical reacts with the metal only at the point where it makes direct contact.

A cooperative development of McCullough Tool Company (Los Angeles and Houston) and the Pennsylvania Salt Manufacturing Company (Philadelphia), the tool was primarily developed for the oil well industry. Cutter has been used successfully in many operations at depths of a few hundred to many thousand feet.

(Chemical cutting tool is being produced by Mc-Cullough Tool Company, Dept. CP, P. O. Box 2575, Houston 1, Texas . . . or for more information check CP 1829 on form opposite last page.)

When inquiring check CP 1828 opposite last page

Catalytic cracking process converts even "bottom of barrel"...

heavy refining residues no longer a problem

Long a troublesome problem for refiners, heavy refinery residues can now be converted to high-quality distillate products by means of a new catalytic cracking process. Proved in commercial operation for over a year, the "Houdresid" process is now available for general licensing to the refining industry.

Greater yields of high octane gasoline and domestic furnace oil, total conversion of heavy residue, and elimination of production of heavy residual fuel oil are the characteristics that distinguish process from others.

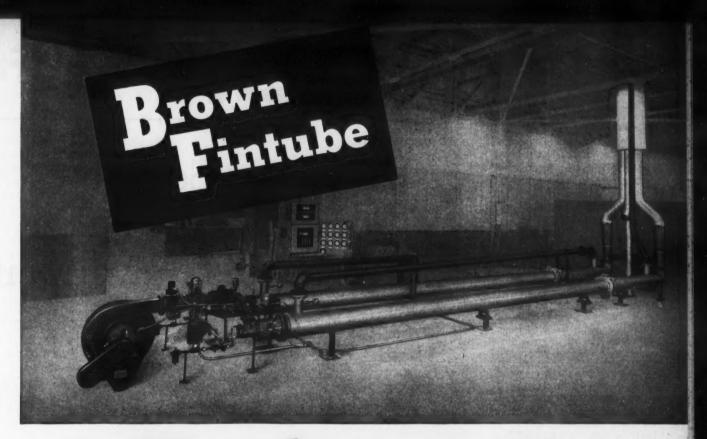
Mechanical design of equipment is similar in many respects to that used in Houdriflow catalytic cracking. Both natural and synthetic catalysts may be used. Slightly higher equipment and operating costs are made up by higher value of products, and payout of incremental investment is reported accomplished in a few months.

Efficient conversion of a wide variety of residual, including those high in sulfur, nitrogen, and metal contaminants, is said to be possible. Recycle operation with even the heaviest of residuum fractions provides increased gasoline yield at only moderate increase in coke deposition.

In the commercial operation, total crude is fractionated to produce gas, gasoline, naphtha, kerosene, No. 2 fuel (with ASTM 90%-point no greater than 600°F), and bottoms. Reduced crude from this distillation, representing about 45-50% of the crude, con-

(Continued on next page)

For more information on product at right, specify CP 1830 . . . see information request blank opposite last page.



Fired Indirect Heaters

for

heating air; special atmospheres; corrosive and non-corrosive gases; thermal chemicals; circulating oils; asphalt; for super heating vapors and other very exacting duties.

We can generally guarantee surface temperatures of the finned combustion tube, to a maximum of 200° F. above the maximum temperature of the liquid—this is extremely desirable when heating asphalt and certain other materials.

up to 10,000,000 BTU per hour 3 standard types... gas, oil or combination burner



Write for Bulletin No. 551



Above: Three Brown Fintube Air Heaters Mounted from Ceiling to Save Floor Space. Belew: Outdoor Installation of Two Gas Fired Heaters.



BROWN FINTUBE COMPANY

Elyria, Ohio

Engineering and Sales Representatives in the Principal Cities

(Continued from preceding page)
stitutes feed to the Houdresid

Conversion (reduced crude from mixed Louisiana, East Texas, and Mid-Continent crudes) ranged from 65 to 70% (by volume), variation being consistent with changes in throughput, recycle ratio, space rate, catalyst-to-oil ratio, and temperature during residuum cracking operation.

The C_b+ gasoline yields vary from about 48 to 53%, and coke yields vary from 5.9 to 8.2% (by weight). Synthetic crude from unit is fractionated to produce gas, gasoline, No. 2 fuel, heavy gas oil, and a small-bottoms cut which is consumed as refinery fuel. Heavy recycle oil is cracked to extinction.

(Houdresid process was developed by Houdry Process Corporation, Dept. CP, 1528 Walnut Street, Philadelphia, Pa. . . . or for more information check CP 1831 on form which is located opposite last page.)

Production upped 10% in pottery plant by carbide tool

resists abrasive action of twirling unbaked clay ware

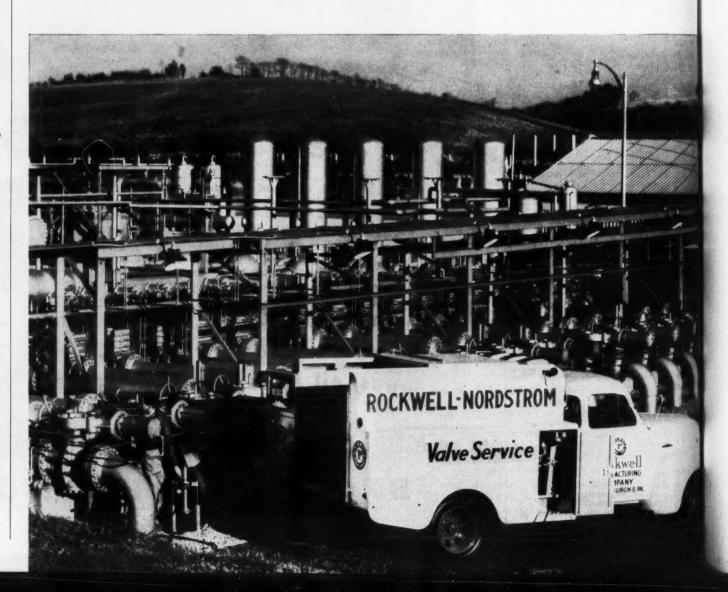
Rejects have been virtually eliminated and production increased by 10 per cent by switching to carbide-tipped finishing tools at Scio Pottery Company, Scio, Ohio. The metal, Carboloy grade 883, is next in hardness to diamonds, and resists the abrasive action encountered by the tool as it is applied to the rapidly twirling unbaked clay ware in the finishing operation.

Formerly, the conventional steel tools dulled quickly and had to be resharpened several times per shift. Each worker had to keep several finishing tools on hand to keep production going. Also, as the tools dulled, they had a tendency to chip the ware, causing rejects.

Shift to the carbide tool was made easily. Company simply brazed a

NEW! Rockwell

A Mobile Service For Low Cost Contracted Valve Maintenance



"Workshops on Wheels"

WHAT IT IS: Rockwell's new Mobile Maintenance and Lubrication Service is designed to increase the efficiency and lower the cost of valve maintenance for oil and gas field installations, refineries, pipe lines, chemical plants, and processing plants. It is made possible by a fleet of specially-built valve "workshops on wheels," manned by factory-trained experts, and equipped to provide complete "on the spot" service on a regular schedule, tailored to fit individual needs.

HOW IT WORKS: A Rockwell engineer, thoroughly familiar with Nordstrom valve design and maintenance, as well as with your particular process requirements, studies your installation in terms of its service needs. Then a mutually agreeable schedule is established for the servicing of your valves. From that time on, you have no valve maintenance worries; they become the responsibility of a Rockwell service expert. At regular intervals he will handle all servicing and lubrication quickly, efficiently, working from one of Rockwell's "workshops on wheels." These Rockwell-designed trucks are equipped with the most advanced lubrication, servicing and repair equipment, and built to operate with complete safety under any fire or explosion control requirements.

WHAT IT COSTS: Naturally, the price of this new planned maintenance and lubrication service varies with the size and number of valves, and with frequency of service. Definite prices are established after a Rockwell engineer has studied your individual requirements.

Actually, this new Rockwell service saves far more than it costs. It saves on fixed maintenance overhead. It saves on valve repairs. It saves by reducing costly down time. Because it is expert preventive maintenance performed on a regular schedule, it saves by spotting potentially expensive trouble before it gets expensive. And, of course, it saves on valve replacement costs because your valves will give you longer, more economical service life.



Pre-planned "on-the-spot" lubrication and service . .



... performed by scientifically equipped experts ...



. . . cuts maintenance, down time, and replacement costs.

The new Rockwell Mobile Maintenance and Lubrication Service is another extra value you can get only from the world's oldest and largest maker of lubricated plug valves. Its sole purpose is to help you get the best possible valve service at the lowest possible cost. For more detailed information, send the coupon below.

ROCKWELL-Nordstrom VALVES

LUBRICANT SEALED FOR POSITIVE SHUT-OFF



Rockwell Manufacturing 400 N. Lexington Avenue Pittsburgh 8, Pennsylvan	e
Please send me complete Mobile Service.	information about Rockwell's new
Please have a Service Eng needs.	lineer survey my valve maintenance
Name	Title
Company	
Address	

carbide tip to each tool, sharpened it, and put it into use. Each worker now needs only one tool to keep production going. Tools are touched up on a grinder about three times a week and last over three months.



Carbide-tipped tools have virtually eliminated rejects from finishing operation at pottery plant

Steel costs have also been reduced. Previous to the switch, company had to buy steel by the roll in order to keep workers supplied with an adequate number of tools.

(Carboloy grade 883 is product of Carboloy Department of General Electric Company, Dept. CP, E. 8th Mile Road near Van Dyke, Detroit 32, Michigan . . . or for more information check CP 1832 on form which is located opposite last page.)

Chart tells efficiency of oil extractions

Accurate determinations of vegetable oil extraction efficiencies may be made without mathematical calculations, through use of an alignment chart prepared at the Southern Regional Research Laboratory of United States Department of Agriculture.

Chart and details of its derivation and use is issued without charge by Southern Regional Research Laboratory, United States Department of Agriculture, 2100 Robert E. Lee Boulevard, New Orleans 19, Louisiana.



For more information on product at left, specify CP 1833
. . . see information request blank opposite last page.

Get Both

bearing features



fully enclosed and protected

The bearing is enclosed with a bearing cap held tightly in place against the inner face of the bearing enclosure. This cap, with its close running clearances, keeps grease from the interior of the motor . . . retains an ample supply within the bearing enclosure.

At the outer side of the bearing, double labyrinth seals keep grease in, also keep dirt out. What's more, large grease reservoirs act as additional dirt traps.

easy to grease

You can lubricate the bearings without dismantling the motor. Pipe-tapped holes in the bearing housings at three points provide both means for inserting new grease and a means of flushing out old grease.

Look for the extra bolts on the end housing . . . the sign of greater value. Ask your Allis-Chalmers representative or Authorized Distributor to show you a cutaway section of this maintenance-cutting design. Or write Allis-Chalmers, Milwaukee 1, Wisconsin, for Bulletin 51B7286.



ALLIS-CHALMERS



When inquiring check CP 1834 opposite last page

IDEAS

Dry coatings applied to paper by electrostatic force . . .

process adaptable to different types of coatings with variety of colors

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Recently announced process applies dry coatings to paper by means of electrostatic force. Principle used is basically the same as that used in an electrostatic precipitator. Coating material, suspended as a dust cloud in air, is charged electrically and deposited on the web with strong electrostatic fields. The air-borne coating powder is charged by means of unipolar corona discharge.

Unit consists essentially of a closed system for generating and circulating a cloud of coating powder and a means for electrically charging and depositing the coating powder on the paper web in the coating chamber. Before use, coating materials are ground to an average particle size of from 5 to 10 microns.

Coatings of from 3 to 20 lb (basis 25 by 38-500) have been deposited on webs moving at rates up to 100 fpm. After coating has been deposited, it is fixed to paper by heating.

Major advantage of process is its adaptability to different types of coatings (resins, pigments, mica, flock). A wide variety of colored coatings can be made by mixing colored pigments with the binder materials.

Development work on the process was sponsored by Bergstrom Paper Company, Neenah, Wisconsin. Company plans to make process available to others.

(Electrostatic coating process was developed at Battelle Memorial Institute, Dept. CP, 505 King Avenue, Columbus 1, Ohio . . . or for more information check CP 1834A opposite last page.)

Radioactive method developed for measuring available phosphate in soils . . .

results are so accurate that they can be expressed in terms of lb of superphosphate per acre

Using radioactive phosphorous as a research tool, a method has been developed of measuring available phosphate in any soil so accurately that it can be expressed in terms of pounds of superphosphate equivalent per acre. Development of this method marks science's first penetration of soil make-up to learn how much of any specific plant nutrient is actually available to plants.

In the tests, plant absorption of phosphorous was measured from two sources: 1) the natural soil-held phosphate, and 2) radioactive phosphate fertilizer mixed with the soil. Since the radioactivity does not change the phosphates except for the identifiable

72

"tag" on the radioactive material, it was reasoned that phosphate would be taken up by plants from both sources in the same proportion that the two phosphates were available in the soil.

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It was found that millet grown in pots of Norfolk sandy loam soil, to which had been added radioactive phosphate fertilizer (superphosphate) at the rate of 500 lb per acre, took up phosphate from the two sources in equal amounts. In similar tests, a Davidson silt loam was shown to contain available phosphate equal to 167 lb of superphosphate; a Brookston silt loam, 1500 lb, and Caribou silt loam, 4500 lb.

Method is now being used to limited extent at Federal field stations and by cooperating agricultural experiment stations to improve phosphate fertilization recommendations. Method is expected to be used more widely as research stations become equipped to handle radioactive fertilizers.

(Phosphate test was developed by Atomic Energy Laboratory, US Department of Agriculture, Plant Industry Station, Beltsville, Md.)

Who can use liquidproof paper that lets air go through?



"Saturday matinees are certainly a lot quieter now"

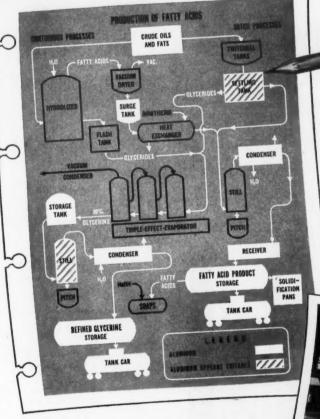
Uses are being sought for a new paper that is resistant to passage of oil, water, and other liquids, but will permit air to pass through freely. Some folks say it's just right for paper raincoats, others think it's perfect for popcorn bags that can't be blown up and popped in theaters. Company is willing to talk to anyone with ideas on the subject.

(Liquidproof paper was developed by Riegel Paper Corporation, Dept. CP, 260 Madison Avenue, New York 16, New York . . . or for more information check CP 1835 on form opposite last page.)

Handling glycerine and fatty acids?

Do it better, cheaper...with

ALCOA ALUMINUM



FATTY ACIDS, ALCOA Aluminum tanks, piping, heat exchangers, shipping drums and tank cars are standard equipment for handling fatty acids. OLEIC ACID, for example, does not attack aluminum even at the boiling point provided a trace of moisture is present. Oleic acid is shipped in aluminum tank cars. FORMIC ACID solutions, when uncontaminated, have no appreciable action on aluminum at room temperature. ACETIC ACID is handled commercially in aluminum stills, condensers, piping, valves, receivers, storage tanks, shipping drums and tank cars. At room temperature, the rate of attack on aluminum by solutions of acetic acid does not exceed 0.001 ipy. Attack in dilute solutions varies directly with temperature. At the boiling point, however, the glacial acid is compatible with aluminum provided a trace of moisture is present.

GLYCERINE and its solutions have no action on ALCOA Aluminum. Aluminum stills, condensers, heat exchangers, receivers, piping, storage tanks and tank cars (as shown) are in service with natural and synthetic alycerine.

FOR MORE INFORMATION on the use of Alcoa Aluminum in handling glycerine and hundreds of other products, write today for our new FREE, 80 page book, *Process Industries Applications of Alcoa Aluminum*. Contains the latest production and design data.



ALUMINUM COMPANY OF AMERICA 902-L Alcoa Building, Mellon Square, Pittsburgh 19, Pennsylvania

Please send me your new, FREE book, Process Industries Applications of Alcoa Aluminum.

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Сомрану

City Zone State

When inquiring check CP 1836 opposite last page

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BROOKS LEADERSHIP achieved by design dowel-pins are the difference

N(0)T(0)R(0)UE NO HRE



🖁 stainless steel dowel-pins preis completely assembled. Tube



a complete line... BROOKS

ROTAMETERS ... for every service

BROOKS ROTAMETER COMPANY 103 EIGHTH STREET . LANSDALE, PA.

When inquiring check CP 1837 opposite last page

instrumentation & control



More than a year ago, Atlantic's Atreco Refinery at Port Arthur, Texas put an 8000 bpd "Catformer" under electronic control. Here's . . .

how electronic control stacks up

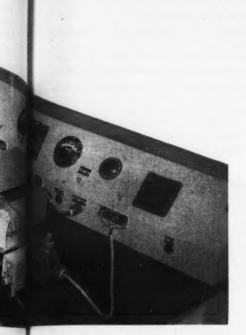
- . Operation is dependable and accurate
- First cost was fairly low; could have been lower except for pre-cautions which have been found largely unnecessary
- Control house is simple and small
- · Personnel requirement is small
- · Little maintenance needed so far. Repairs, when needed,

In August 1954, an 8000 barrel per day "Catformer" was put on stream at Atlantic Refining Company's Atreco refinery in Port Arthur, Texas. This unit is instrumented with an electronic control system. Electronic control was chosen when the Engineering and Construction Department decided, during preliminary design of the "Catformer,"

that electronic control offered certain advantages over conventional control systems. Among the advantages which they thought might be expected were these (quoting from a report):

- a) Operate dependably and accurately.
- b) Offer low first cost. As the number of

NO



Maintenance and calibration facilities are fully furnished by this simple bench

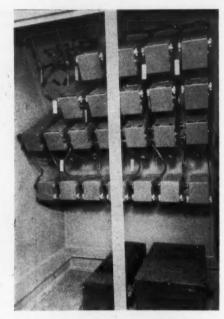
instruments and controls has increased, the cost of the equipment and interconnections has required closer scrutiny. The skilled labor required for the tubing work between pneumatic transmitters and controllers, plus the costs of such auxiliaries as air compressors, filters, driers, indicated that there should be less costly ways of doing the job.

- c) Require minimum size control house. That the trend in control houses is strongly in the direction of larger and more elaborate buildings is apparent to all. Unfortunately, the consequences in terms of over-all cost of the instrument installation are not always appreciated.
- d) Require minimum operating personnel. Some instrument panels cover so much space that they require the attention of several operators.
- Require less maintenance and be easier to maintain when maintenance is required.
- f) Be adaptable to incorporating probable future developments in the field of automation."

One important factor in the decision to-(Continued on next page)



This compact control console replaces usual graphic panel in control room



View behind panel of console shows interconnecting wiring and accessibility. Instruments are pulled out from console front for repairs or calibration, if needed



This small control house (14 by 25 ft inside dimensions) handles 8000 bpd unit

the NEW USG

SUPERGAUGE®



...built

to last a lifetime!

With proper application, the new USG Supergauge will last a lifetime!

SEGMENT—stainless steel, with nylon-faced gear section. Nylon-to-metal bond stabilizes the nylon against expansion and contraction . . . maintains accurate pitch diameter . . . assures proper mesh with stainless steel pinion under severe temperature and moisture conditions.

MONO-UNIT CONSTRUCTION—permits easy removal of complete gauge assembly for inspection and adjustment.

ARC-LOC MOVEMENT—permits all calibration adjustments of gauge assembly from rear without removing dial and pointer.

LEGEND ON DIAL—gives complete description of socket, Bour-

don tube and movement material for ready identification.

MICROMETER ADJUSTABLE SELF-LOCKING POINTER—permits accurate repositioning of pointer.

These features are also available in USG Solfrunt Gauges with solid front construction.

Supergauges available in $4\frac{1}{2}$ ", 6", and $8\frac{1}{2}$ " sizes. For complete information on case styles, materials of construction and connections write for Publication 1819.

UNITED STATES GAUGE

Gauge Headquarters
FOR OVER 50 YEARS

United States Gauge, Division of American Machine & Metals, Inc., 103 Clymer Avenue, Sellersville, Pa.

When inquiring check CP 1838 opposite last page

to regulate and record—

TEMPERATURE.. PRESSURE.. VACUUM..TIME

mechanical instruments by

WESTON

Just Published!



Just published... the new catalog M2A which fully illustre... and describes the comprehensive line of WESTON mechanical instruments, noted for their long-time accuracy and dependability. Send for your copy today; or ask your local Weston representative for help on any measurement or control problem involving temperature, vacuum, pressure. Weston Electrical Instrument Corporation, 614 Frelinghuysen Ave., Newark 5, N. J., a subsidiary of Daystrom Inc., 200 Elmora Ave., Elizabeth, N. J.



RECORDING INSTRUMENTS . . . in 9", 10" and 12" chart sizes — single and multipen — for all requirements.



TIME CONTROLLERS , . . make any semiautomatic retort control system fully automatic. Available in both standard and special forms.



indicating controllers . . . accurately regulate lemperature, vacuum, pressure and indicate on direct-reading scale.

TAG

RECORDING CONTROLLERS

30" mercury - pressures 7500 psi or higher.

DIAL THERMOMETERS (remote reading)...furnished with mercury, gas, or vaper pressure actuations. Flush or wall mounting. Indicate low as -325°F., high as 1000°F.

WESTON Instruments

When inquiring check CP 1839 opposite last page

INSTRUMENTATION & CONTROL

ELECTRONIC CONTROL

(Continued from preceding page)

wards electronic instrumentation was an indicated first cost of 12% less than conventional systems. While equipment costs did not differ significantly, simpler installation for wiring accounted for saving. System employed is based on conversion of a measured variable to a 0 to 0.5 volt, 60 cycle, AC signal at the sensing element. This signal is transmitted to the control house. Here controllers, for example, convert the difference between transmitter signal and set point signal to a direct current. Transmitted

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Power relay (near post) converts an electrically transmitted control signal to air pressure to operate valve

through manual-automatic selector switch, this signal drives a pneumatic transducer or power relay.

Air from the power relay actuates any standard valve. While recorders, controllers, manual controls, and indicators are located in the central control house, power relay is mounted near its control valve to take advantage of electric transmission.

Instrumentation at the control console employs a plug-in arrangement. Graphic panels are not used, despite their initial advantages in training and familiarizing operators with the plant. It was felt that higher cost, excess building space requirements, and general lack of convenience in operation as compared to a console were disadvantages that outweighed the training feature. Further, console offers advantage of being easily fabricated, tested and shipped as a unit — easing installation problems.

This "simplicity" philosophy is carried through in the small control house (only fourteen by twentyfive feet inside). Reasoning here is that cost of a control house is a large part of total instrument investment. Power system for this set-up consists of constant voltage transformer (also serving as an isolating transformer) which supplies approximately 1500 VA. This power is for instruments only — accessory equipment (clock, running lights, etc.) are fed directly from power line.

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Controllers and recorders have internal circuit protection. Despite this, additional protection is required to isolate separate systems from the main feeder. In the recording system, for example, circuit protection is arranged to isolate both the recorder and its associated transmitter in case of failure of either. Arrangement allows valve to be operated manually from control house in case of failure of either transmitter, recorder, or controller.

Emergency Power

Although plant is not designed to operate in cases of complete electrical power failure, it was considered necessary to provide instruments with emergency power to protect against an abrupt loss of control. Requirements for emergency power supply were that interruptions not exceed a three-second interval and that supply should have a plus or minus 3-cycle per second frequency regulation.

To meet these, emergency power can be supplied from a 20-kw steam turbine. Tests, however, indicated that this turbine-generator required five to ten seconds to come from rest to rated voltage. To meet the three-second requirement, it was necessary to install an emergency system.

This auxiliary unit is continuously operating and is capable of delivering power immediately when called upon. It consists of an AC motor, and AC generator, and a DC unit used as motor or generator, all on the same shaft, a storage battery, and a control cabinet. Normally AC motor drives AC generator and DC unit. DC unit acts as a generator to maintain the battery in a fully charged condition. If power fails, battery supplies power to the DC unit which then acts as a motor to drive the AC generator.

Though this battery-generator arrangement would power the console for half an hour, instrument load is transferred to the turbine as soon as it is up to rated speed. Experience indicates that the emergency power requirements are more exacting than necessary. These requirements may be justified, however, for continuous operation at guaranteed accuracy.

Precaution Unnecessary

Atlantic engineers feel that they would not have taken this extra precaution had they had previous experience with the system — field tests plus unexpected complete power failure have shown that instrument power may be off for up to ten seconds and still maintain satisfactory control for making an orderly shutdown of the unit.

Though bugs were anticipated at start-up, they never materialized. No instrument problems developed. Operations to date have been characterized by this

(Continued on next page)



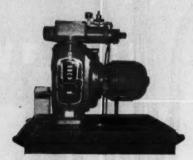
FINAL CONTROL ELEMENTS

CONVENTIONAL - Control Valve

One of the most conventional methods of controlling practically any variable is to use a control valve to regulate the fluid stream on the discharge side of a pump or similar prime mover. This is, of course, a simple and obvious approach, but frequently poses serious problems especially when handling extremely viscous materials, abrasive materials rials, corrosive fluids, etc. One of the proved and accepted methods of hurdling these perplexing obstacles is to control at the source by positioning



Conoflow Series LB Control Valve

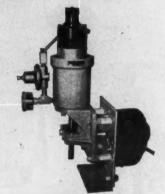


Cylinder Conomotor actuating variable speed drive (Link Belt)

.... THE PRIME MOVER-electrically

.....THE PRIME MOVER-mechanically

In this manner the prime mover is actuated directly by the ontrol instrument—eliminating the necessity of breaking into the line downstream to install a control valve. A most common method of accomplishing this is to control the pump speed by means of a mechanical variable speed transmission. Cylinder Conomotors are available as original equipment on a wide variety of drive units similar to the one illustrated here, including U. S. Electrical Motors, Stalling Electrical Motors, Crabon Transmission Boses. Sterling Electric Motors, Graham Transmissions, Reeves Pulley, etc. Many pumps have been adapted for direct control by using Cylinder Conomotors to automatically adjust pump stroke as in the Lapp Pulsafeeder and Milton Roy pumps. In some cases it is more practical to control at the source through electrical means by modulating • • • • • •



Conoflow EB Current Controller positioning rheostat

other electrical values. A common approach to the regulation of fluid flow in this manner is to position the rheostat in the motor field or the armature circuit as a direct function of signal pressure, thereby regulating the speed of the D.C. shunt-wound motor driving the pump. On many applications, variable speed transmissions and electric motors can be controlled from zero to full capacity offering a resultant control range that cannot be matched by conventional control valves. In installations involving large capacity

Conoflow EB Current Controllers operating from a 3-15 or

other standard range pneumatic controller are available in over 200 combinations of electrical components for control-

ling voltage, current, inductance, capacitance, resistance or

equipment this can prove extremely important since it eliminates the needless operation of large centrifugal pumps

running at constant speed wasting power by discharging against a stalled or greatly restricted head.

For additional information on Conoflow Cylinder Operators write for Bulletin B.50.2.

CONOFLOW CORPORATION

FOREMOST MANUFACTURERS OF FINAL CONTROL ELEMENTS

2100 ARCH STREET, PHILADELPHIA 3, PA.

When inquiring check CP 1841 opposite last page

INSTRUMENTATION & CONTROL

ELECTRONIC CONTROL

(Continued from preceding page)

same reliable performance. Atlantic feels that there are no problems peculiar to this electronic system of control. Optimum settings for proportional band, automatic reset, and rate action were found by the usual "cut and try" procedure.

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Specifications for standard controllers include a range of two to 200 per cent proportional band, 0.03 to 20 repeats per minute automatic reset and 0.05 to 8 minutes rate action.

These standard controllers are used for temperature. Flow and pressure controllers have a fast-acting reset action (0.03 to 240 repeats per minute) and no rate action. It has been found that speed of response of the instruments is faster than that of conventional systems. Control valves, slowest part of system, have not permitted full advantage in speed.

Accuracy of measuring and recording system is one half of one per cent. Stability has been found to be good enough to maintain accurate calibration for indefinite periods of time. A minor advantage of recorder design has also been found: recorder pen is completely dissociated from controlling action thus accidental deflection of pen during inking does not effect control action.

"Catformer" is operated by two men per shift. Though electronic instrument system is not primarily responsible for this it is given credit for being so easy to operate that one man can adequately stay in control.

Maintenance

Maintenance has been found to be infrequent and simple to handle. Circuits are less complicated than those of home radios, for example. Test facilities for maintenance and calibration consist of manufacturer's test unit (transmitter and set point signals), adjustable voltage supply, adjustable and regulated air supply, a voltmeter reading supply voltage, and a milliammeter or controller output current. A vacuum tube voltmeter is used to read check point voltage when the set-up is used for maintenance work. Entire cost of material was approximately \$250.

Futher simplifying maintenance, a system of rotating spares assures quick replacement. Any faulty unit is pulled out, a spare plugged in, and faulty unit can be repaired at leisure.

Atlantic Refining feels that their objectives have been accomplished. Were they to make a similar installation today, elaborate emergency power systems would be omitted. They would also plan to use indicators on field transmitters near control valve.

(Information was taken from a report by Atlantic Refining Company's F. C. Somers and R. C. Fuhs.)

(Basic electronic components used in this control system were developed and built by The Swartout Co. Dept. CP, 18511 Euclid Ave., Cleveland 12, Ohio. . . or check CP 1842 opposite last page.)

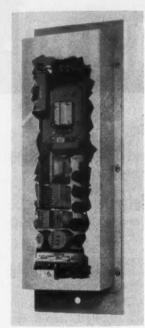
Converts EMF to air pressure proportional to original DC with $\pm 1\%$ accuracy . . .

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flapper-nozzle assembly provides air output for pneumatic indicator, recorder, controller



Cutaway shows component parts of transmitter

Uses: Converting electrical measurements of temperature, speed, power, pH into air pressure proportional to original measurement.

Features: Instrument covers spans from 10 mv to 60 mv and converts to 3-15 psi pneumatic output with accuracy of ±1%.

Description:

Transmitter receives millivolt signal from thermocouple, tachometer, pH meter. Signal is amplied, filtered, and fed to detector circuit. DC output passes through resistor and transducer. Transducer current provides magnetic force to position flapper valve providing air

output proportional to original DC measurement. Instrument sensitivity is 0.05% of full scale. Output signal will change over full range in four

(EMF/Pneumatic transmitter is product of The Foxboro Company, Dept. CP, 86 Neponset Ave., Foxboro, Mass. . . . or for more information reader may simply check CP 1843 on form which is located opposite last page.)

Pictures pyrometer accessories, tabulates TC wire data

Printed in two colors, 16-page catalog pictures and describes thermocouples, protecting tubes, thermocouple wires, lead wires, insulators, and other accessories. Tabulated data for wire shows diameter, maximum temperature, and feet per pound.

Pyrometer Supply Catalog is issued by Arklay S. Richards Co., Inc., Dept. CP, Newton Highlands 61, Mass. When inquiring specify CP 1844 on form opposite last page.

EVAPORATOR

One of a series of basic instrumentation recommendations for the unit operations



GEORGE E. HOWARD, Manager Application Engineering Dept.

"The success of the Taylor approach to evaporator control is due to our engineers' knowledge of how an evaporator works and the problems involved. This experience has been gained through years of working with widely diversified industries. Data sheets on this and other evaporator problems are available on request."

PROBLEM

To operate the evaporator to produce a uniform product of the optimum concentration at the lowest possible cost. And with a minimum of operator attention and maintenance.

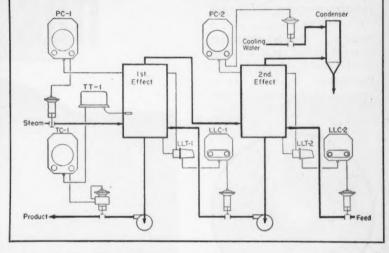
SOLUTION

(see diagram) On body *1 the FUL-SCOPE* Pressure Controller (PC-1) insures stable pressure conditions in the body, despite steam supply variations, fouling of tubes or changes in product rate. It also provides a record for correlation with solution temperature.

The TRANSAIRE* Transmitter (TT-1) senses boiling temperature as a measure of concentration, since pressure is maintained precisely. SPEED-ACT* in the measuring circuit insures practically instantaneous response.

The Temperature Controller (TC-1) records and controls boiling temperature and regulates discharge rate to maintain precisely the desired concentration.

Trade Mark



The Level Controllers (LLC-1 and 2) maintain flow of the solution through the evaporator in proper relation to the discharge rate. They insure optimum use of the heating surface and considerably reduce tube fouling.

Piping costs and maintenance can be minimized by using Differential Pressure Transmitters (LLT-1 and 2) close coupled at the point of measurement. Yet the receiving level controllers can be located at a convenient centralized spot. Where purges are necessary, the double process connections on the DP Transmitter permit the meter body as well as the lines to be purged.

The Pressure Controller (PC-2) measures and controls absolute pressure (corrected for barometric pressure) in the final effect by regulating flow of cooling water to the condenser. This assures stable operation, despite variations in cooling water pressure or temperature or fouling of tubes in the 2nd effect. In cases where cooling water supply is limited, it conserves condenser water requirements by maintaining the minimum quantity necessary for best operating conditions.

Evaporator rate may be changed easily with a minimum of upset to concentration control, simply by adjusting the control point of PC-2.

SUMMARY OF BENEFITS

A control system such as this will pay for itself in a short time by:-

- 1. Prolonging the period between clean-ups.
- 2. Insuring steady output of uniform product, even with erratic supply.
- 3. Maintaining steady steam demand.
- 4. Cutting operator attention time to routine observation, thus releasing trained personnel for more productive duties.

Send for Data Sheet #10 covering the recommended instrumentation for multiple effect evaporators in greater detail. And remember, whatever your problem in instrumentation, Taylor Field Engineers are ready, willing and able to serve you. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada.

Taylor Instruments MEAN ACCURACY FIRST

IG

INSTRUMENTATION

Allows manual control of pneumatic systems when needed . . .

gradual switch controls air pressure from 0 to 15 psi

Uses: For stand-by control of pneumatic pressures should automatic controls fail.

Features: Gradual switch may be set to deliver air at any pressure between 0 and 15 psi.

Description: Switches can be surface- or flush-mounted in either of two models. One model de-



Switch controls air pressure

livers air with increasing pressure as pointer is turned clockwise from zero to "open". Second model delivers air as pointer is turned clockwise from zero to "close". Connections are for 1/8" pipe. Finishes are either dull black or chrome plate.

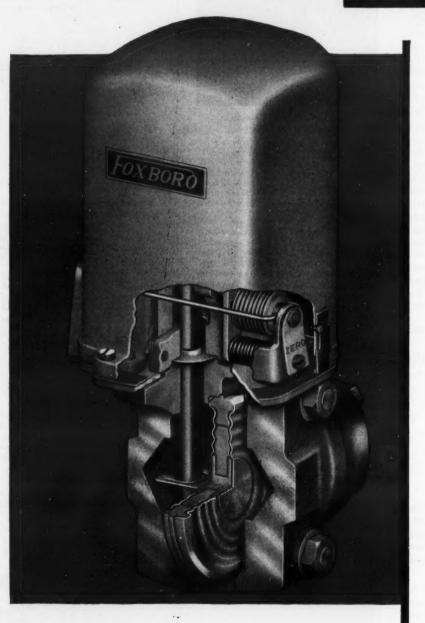
(Gradual switches are product of The Powers Regulator Company, Dept. CP, 3400 Oakton St., Skokie, Ill. . . . or for more information check CP 1846 opp. last page.)

Metering small flows of liquids or gases

Two-color bulletin of two pages describes metering small flows of liquid or gas. Instrument described uses rotameter principle.

Bul 135 is issued by Brooks Rotameter Co., Dept. CP, Lansdale, Pa. Specify CP 1847 on form opposite last page.

ONLY the Type 13A d/p Chas these 6 advanced d



- Positive Overrange Protection up to full 1500 lb. rating
- Fully Adjustable Ranges . . . 0-20" to 0-80" and 0-50" to 0-250" H₂O differential
- Automatic Internal Damping
 ... fast, stable measurement
- Simplicity . . . easiest, lowest cost installation, least maintenance
- Convenient Zero Adjustment
 . . . external no need to remove weatherproof cover
- Highest Sustained Accuracy

 even under extreme operating and ambient conditions

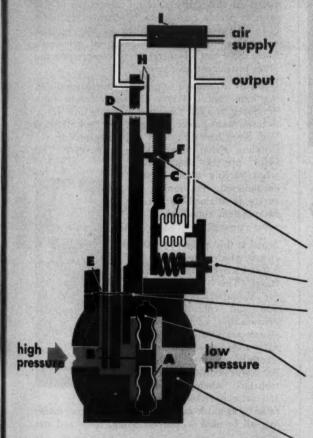
With these basic features, plus many other technical refinements throughout, the new Type 13Å d/p Cell* Transmitter surpasses all previous records in performance... economy... convenience. For the complete story and a demonstration, call your nearest Foxboro representative. Write for new Bulletin 13-11. The Foxboro Company, \$111 Neponset Ave., Foxboro, Mass., U.S.A. Factories in the United States, Canada and England.

*Reg. U. S. Pat. Off.

More Foxboro flow transmitters are in use by the process industries than all other makes combined!

Cell Flow Transmitter

design features...



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How It Works . . .

An increase in differential pressure across Twin-Diaphragm Capsule (A) exerts force to right on force bar (B). Elgiloy® diaphragm seal (E) acts as fulcrum. Force to left at top of bar (B) causes flapper to approach nozzle at (H). Resulting increase in nozzle pressure is amplified by relay (I). This pressure is sent to feedback bellows (G) which develops force to counterbalance the differential pressure on capsule (A). The 3-15 psi output signal from relay (I), always precisely proportional to differential pressure, is transmitted to remote recording or controlling instrument.

Range Wheel is continuously and easily adjustable for entire range whether 0-20" to 0-80" or 0-50" to 0-250" ${\rm H_2O}_{\circ}$

Easy-access screw adjustment permits field "zeroing" without removing weatherproof cover.

Elgiloy® stainless alloy diaphragm seal assures a corresion-resistant, frictionless, positive pivot point. Instrument is constructed in 3 basic units — body, transmitter, and air relay block — eliminating all possibility of errors produced by piping stresses.

Silicone-filled Twin-Diaphragm Capsule filters out flow disturbances ("noise") at measurement source . . . without loss of speed of response. Precisely matched surfaces of diaphragms and capsule core provide "stope" which give positive overrange protection in both directions.

Rugged forged body, optionally Type 316 S.S. or carbon steel, gives greatest strength with least weight...ultracompact design permits low cost mounting from flange taps.



First in Flow Instrumentation

Checks optical density of fluid-product in process

Uses: Continuously indicating and controlling composition of fluids by monitoring turbidity or optical density. Unit will also monitor and control smokestacks and ventilating ducts.

Features: Plug-in construction of chassis and meter simplifies installation, maintenance.



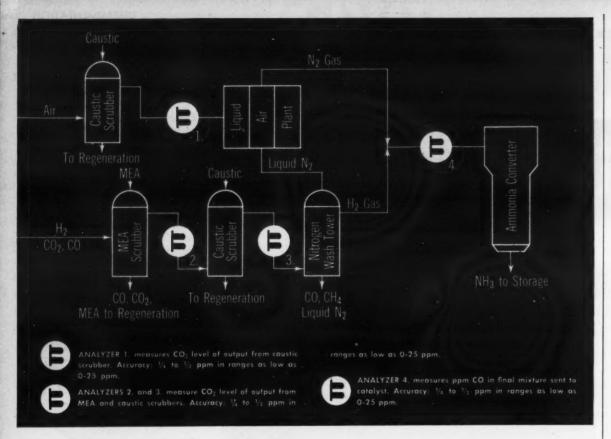
Unit indicates "per cent transmission" and "optical density"

Description: Instrument consists of a light source, photoelectric scanner and control unit with meter. Two meter scales indicate "per cent transmission" and "optical density". Control operation is provided at any light transmission value from 90 to 0%. Green light indicates normal conditions; red light indicates condition of excess optical density. Unit will automatically turn off blowers, valves, close dampers, operate multiple-warning devices.

Unit requires 115/230v, 50/60 cycles. Unit is internally compensated for line voltage variations from +10 to -15%. Response time is 3.5 seconds max. (Photoswitch Densitometer is product of Photoswitch Div., Electronics Corp. of America, Dept. CP, 77 Broadway, Cambridge 42, Mass. . . . or check CP 1848 on form opposite last page.)



For more information on product at left, specify CP 1849
. . . see information request blank opposite last page.



in a 250 ton per day ammonia plant...

CONTINUOUS ANALYZERS INCREASE OUTPUT 10%

... save \$16,000 a year

Perkin-Elmer continuous infrared analyzers can increase the efficiency of your process — by doing away with "analytical lag," moving the laboratory right out to the process line. Take this example of an ammonia plant.

A P-E TRI-NON* Analyzer (Number 1. in flow diagram) continuously measures CO_2 level—determines optimum balance between caustic use and CO_2 removal efficiency. If NH₃ throughput is 250 tons a day, raising caustic utilization from 70 to 80% or more means a saving of \$4,500 to \$6,000 a year.

Analyzers 2. and 3. measure the CO₂ level of output from MEA and caustic scrubbers. At this level, the equipment is paid off in less than a year.

Perkin-Elmer

CORPORATION
Norwalk, Connecticut

Analyzer 4. measures ppm of CO in final mixture sent to the catalyst. With proper control of CO level, \$8,000 to \$10,000 can be saved by extending catalyst life. The analyzer pays for itself in 6 months!

When you specify continuous analyzers for your process streams, only P-E has a complete line of instruments to choose from. Or let us develop a complete analytical control system for you. Nowhere else can you get the combination of chemical engineering and instrument know-how that you'll find at P-E.



P-E TRI-NON Analyzers are available in a wide range of models and prices to meet all types of continuous analytical problems. They are rugged and dependable, expressly designed for use in the varied environments of a processing plant or refinery. For quick and easy maintenance, instrument components can be tested right on stream — without disconnecting.

When inquiring check CP 1850 opposite last page

Achieve throttling control in electric valve

Built-in pump furnishes hydraulic power both signal and power supply are electric

To complete the growing list of instrument components which function by electrical and electronic means, a new electro-hydraulic control valve operator has been produced. This device uses no compressed air. It can be applied to control of such variables as pressure, temperature, flow, and other usual process variables.

Both power and signal for this control valve are furnished electrically. Obvious advantages of this scheme include fast action by eliminating transmission lags where long distances are involved, preventing freezing or clogging of pneumatic lines, and a cost advantage in air compressors and other instrument accessories.

Operator is designed to position conventional sliding stem control valves. It uses hydraulic force developed by a self-contained pumping unit which, in turn, draws power from a 115 or 230v electrical line. Since hydraulic fluid is incompressable, positioning action of the valve is positive. This

helps prevent valve flutter when varying stem thrust is encountered. Positioning accuracy is attained by a feedback system contained in the valve operator.

Signal to the operator is a direct current which varies from 0.5 to 5.0 milliamperes for full range travel. (This is standard output for manufacturer's transmission and control systems.) Manufacturer's tests show that signals are unaffected by ordinary ambient conditions and transmission line variations. Successful control has been established where transmitter and valve operator were sepa-

rated by as much as 30 miles. Usual control modes may all be used — proportioning, reset, and rate action.

A modification of the control valve operator has been built to embody controller action. This device controls valve position directly from a transmitter. Incorporating proportional and reset control actions, it is used on local control operations which do not require remote controls. Proportional band, setpoint, and reset rate are set directly on graduated scales. Speed of response produces a phase lag of less than 60° at 1 cycle per second when controller is producing a ½" stroke.



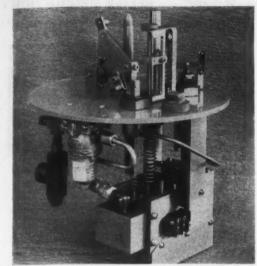
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Close-up of controller mechanism shows adjustments

Both devices are available in weather-proof and explosion-proof construction.

(Electro-hydraulic valve operators are developments of Manning, Maxwell & Moore, Inc., Dept. CP, 250 E. Main St., Stratford, Conn. . . . or for more information about manufacturer's product reader may simply check CP 1851 on form which is located opposite last page.)

Illustrates complete line of temperature indicators

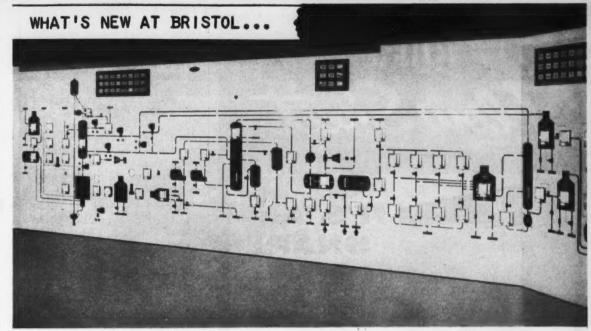
Fourteen collected data sheets make up catalog of a complete line of vapor-pressure indicating thermometers. Several dial types are available. These are indicated in both Fahrenheit and Centigrade scales. Specifications, dimension drawings, and tabulated information are included.

Cat 76-T is issued by Jas. P. Marsh Corp., Dept. CP, 3501 W. Howard St., Skokie, Ill. When inquiring specify CP 1852 on form opposite last page.

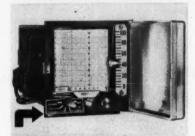
Describes float-actuated level controllers

Several variations of float-actuated liquid-level controllers are pictured and described in fourpage, two-color bulletin. Cutaway sketches show how magnetic pickup principle is used.

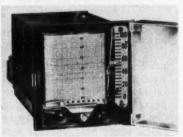
"Level-Master" is issued by Jo-Bell Products Co., Inc., Dept. CP, 4842 S. St. Louis Ave., Chicago 32, Ill. When inquiring specify CP 1853 on form opposite last page.



TYPICAL GRAPHIC PANEL of Bristol Metagraphic instruments in oil refinery.



SIX-POSITION TRANSFER VALVE (on one knob) for cascade control.



THIS METAGRAPHIC TWO-PEN RECORDING RECEIVER records, indicates and controls one variable, and records another. It gives a continuous indication of either set-point or valve-position and indicates the other when valve knob is depressed.

Bristol's Metagraphic Receiver line

gives you 35 models to choose from

A new degree of performance flexibility in a pneumatic receiver

Bristol's Metagraphic Receiver is offered for up to 3 measured variables — choice of three- or sixposition transfer valves on one knob.

Full plug-in construction provides a flexibility of use that can't be matched. You can change a recorder to an indicator or vice versa in less than 10 seconds. If trouble is suspected, the unit can be replaced by a spare, checked in the shop — eliminating down time.

The chassis of a Metagraphic Receiver can be withdrawn to an intermediate position while still operating. In this position, receiver can be inspected, charts changed, pens inked, zero adjusted, and

clock serviced.

Continuous valve position indication on same scale as set point. "Bumpless" transfer is effected simply by matching pointers — no need to read scales.

High-visibility colored fluorescent paints make pointers easy to tell apart. Pointers for a given function are the same color in all instruments.

Air chart drives are 100% pneumatic — no electricity needed. Operates from 20 psi air supply.

Universal piping manifold can be adapted to any piping (2-pipe or 4-pipe system). No special tools, no parts required.

Write for the Bristol Metagraphic Receiver bulletin. The Bristol Company, 141 Bristol Road, Waterbury 20, Conn. 5.43

BRISTOL

POINTS THE WAY IN

HUMAN-ENGINEERED INSTRUMENTATION

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

When inquiring check CP 1854 opposite last page

Flow Skeet



• • . to select the small valves you need when you have Hoke's new Valve Selection Chart hanging nearby. You'll be pleased as can be with this simplified method for picking out the proper forged needle valve, bar stock valve, or spring-closing or cam-closing toggle valve from this big (18" x 24") wall chart . . . They're all cataloged for you with dimensional and performance data to simplify your selection, including a Corrosion-Resistance Table for proper valve material choice and the method to be used (with formulae) for determining the proper valve size. Hoke Valve Selection Charts are now available. Just write to us, we'll be happy to fill your request.

P.S. There's another way to simplify your selection of Hoke Valves
...that's by visiting us in Booth 935 at the Chemical Industries Exposition, Dec. 5th to 9th, in Philadelphia's Commercial
Museum. We'd like to show you the many outstanding features of all of Hoke's fluid control products.

HOKE INCORPORATED
THE PROPERTY OF N. A.

When inquiring check CP 1855 opposite last page

INSTRUMENTATION

Midget 1-oz thermostats give precise control in small places...

will actuate at temps between -50 to 500°F

Uses: For precise temperature control or heat detection wherever installation space is at a premium, as bearings, pumps, heated equipment.

Features: Midget thermostat can be set to actuate at any temperature between -50 to 500°F.

Description: Midget thermostats are ½" diam and less than 2½" long. They weigh approximately 1 oz. Contacts open when temperature exceeds specified temperature; contacts on inverse



Regular-size cigaret indicates size of midget thermostats

action models close. Different head styles are available to meet mounting requirements. Cartridge style for insertion into cylindrical cavity, screw-in models with hexagonal heads for threading into 1/8, 3/8" bushings or tapped holes, flange head unit for surface mounting. Thermostat is rated to handle an electrical load of 1 amp, 115 volts AC. Larger loads can be handled with a relay. Cartridge bodies and mounted accessories are of stainless steel. Wiring leads are Teflon coated.

(Thermoswitch is a product of Fenwal, Inc., Dept. CP, 243 Pleasant St., Ashland, Mass. . . . or for more information check CP 1856 on form which is located opposite last page.)

10 be succe. YOU CAN GET BETTER PRODUCTION IN YOUR PLANT



TIME RECORDER-TOTALIZER . This precision instrument



provides accurate, permanent, chronological data about any machine, process or system in plant or office ... on a continuous chart-roll which lasts four months. Uses no ink. Totalizer shows accumulated "on" time.

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STANDARD INSTRUMENT CORPORATION DIV.
HEAT-TIMER corporation
657 BROADWAY, NEW YORK 12, N.Y.

When inquiring check CP 1857 opposite last page

"LIQUIDS WORTH STORING"

ARE WORTH MEASURING"

with a

LIQUIDOMETER

Tank Gauge

- FOR GAUGING LIQUIDS
 OF ALL KINDS
 - 100% AUTOMATIC
 - APPROVED BY UNDERWRITERS'



THE LIQUIDOMETER CORP.
38-18 SKILLMAN AVE., LONG ISLAND CITY, I.NY.

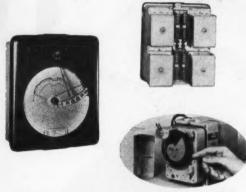
When inquiring check CP 1858 opposite last page

Four receivers - air or DC fit same roundchart . . .

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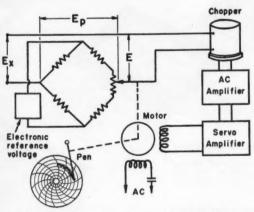
removable units permit recording of up to four variables from both types of signal

Modular receiver for DC is small enough so that four can be fitted into standard size roundchart recorder. Receiver may also be used in combination with similar pneumatic receivers in the same instrument permitting comparison of related variables on the same chart regardless of pickup



Roundchart recorder at left has four receiving units which may be pneumatic or DC. Close-up of DC receiver is shown

characteristics or range spans. Typical combinations might be: temperature, stack temperature, per cent oxygen, and per cent combustibles; or firing and temperature, feed and temperature, kiln speed, and hood draft.



Schematic of DC receiver for roundchart recorder

Features: Interchangeability of receiver unit permits servicing by "spare" and allows four-point roundchart recorders to be designed for required service by user.

Description: Basis of operation of the DC re-

(Continued on next page)



tax analysis purposes. They will accurately measure most any liquid that can be piped. Available in all sizes and several types for every requirement. For full details use coupon or write.

"316" Stainless Steel Meter

FOR CORROSIVE LIQUIDS

This meter, made entirely of type 316 stainless steel is the answer to many a measurement problem in the Food, Chemical, Drug and Industrial Processing fields. It resists corrosion. Made in two sizes rated at 100 and 200 gpm. Quantity control valves, strainers and a variety of registers available. Described in bulletin OG-406.



YOU CAN RELY ON ROCKWELL

CLIP COUPON-MAIL TODAY

rotor construction

ROCKWELL ROTOCYCLE METER

Cutaway to show the all-revolving

ROCKWELL MANUFACTU		Dept. 106-1
Gentlemen:		
I am interested in measuring		
Pipe Size	(Name of Lie	quid)
Working Pressure	_psi Temperature_	°F max.
Max. Flow Rate	gpm Min. Flow Ra	tegpm
YOUR NAME		
COMPANY		
STREET		
CITY	ZONE	STATE

When inquiring check CP 1859 opposite last page

(Continued from preceding page)

ceiver is conversion of DC signal to AC, amplification as AC, and null balance. Design of the ceiver produces a linear chart record for thermocouples and thermopiles. Measurement and control are continuous. There are no automatic or manual standardization periods required.

Electronic voltage reference source is used in place of conventional standard cell and battery. Receiver ranges from DC signals are 0 to 2 mv to 0 to 20v DC. Error is less than ±1/4% for spans of 10 mv or more, ±25 microvolts for lower spans. Sensitivity is 0.05% for all spans. Pen speed is 5 seconds from 0 to 100% scale span. Standard power supply is 115v AC, ±10v at 50 or 60 cps. Receiver will maintain rated performance at ambient temperatures from 40 to 120°F.

(DC receiver-recorder is a development of Bailey Meter Co., Dept. CP, 1050 Ivanhoe Road, Cleveland 10, Ohio . . . or for more information check CP 1860 on form opposite last page.)

Dual unit combines testing of thermocouple output and temperature . . .

> instrument is self-compensating for changes in ambient temperature

Combination tester for checking thermocouple output and temperature.

Tester automatically compensates for Features: changes in ambient temperature. Unit tests either single thermocouples or multiple thermocouple in-



Thermocouple temperature is read on top scale. Output in millivolts is read on lower scale



Describes use in open loop, closed loop, composite, special, and integrated chemical feed systems.

NO

to get help flow control problems:

send for these FREE Milton Roy technical bulletins

MILTON Roy—the name that stands out in precision pumping...for the latest, most advanced methods of accurate and dependable low-capacity flow control!

With (1) a full line of controlled volume pumps for all pressures, (2) new products coming off the line, (3) a wealth of application information on a variety of processes, and (4) complete engineering facilities and experience valuable to you . . . Milton Roy is in an ideal position to offer you really practical service. You can depend on Milton Roy to help you

solve your specific low-capacity flow control problem . . . simple or highly complex.

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Name_

Company_

Addross

City

Zone State

When inquiring check CP 1861 opposite last page

Description: Tester will check temperatures from approximately 72 to 650°F and millivolt output of thermocouples, in both open and closed circuits, from 0-50 to 0-1000 mv. Binding posts are color-coded to prevent errors in connecting lead wires. Special vinyl meter front and large meter pointer allow easy reading.

Instrument is contained in carrying case with compartment for thermocouples. Packed weight is 3 lb 3 oz.

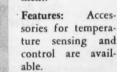
(Thermocouple tester is a product of Robertshaw-Thermostat Div., Robertshaw-Fulton Controls Co., Dept. CP, Youngwood, Pa. . . . or for more information check CP 1862 opposite last page.)

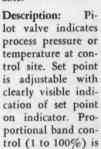
Pilot valves for temperature as well as pressure control action . . .

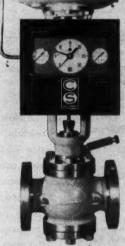
pressure ranges from vacuum to 10,000 psi; temperature from minus 40 to 1000°F

Uses: Pilot operates larger control valve for pressures in the range from 0-15 to 0-10,000 psi, vacuums from 0-30 inches of water to 0-30 inches

Hg. It may also be used to control temperature in a range from minus 40 to 1000°F when connected to mercury-actuated armored capillary temperature-sensing element.







Set point and variable show at pilot

used. Alternative mode uses proportional plus automatic reset. Power relay incorporates sapphire jewel feed orifice and has built-in pushbutton cleaner.

(Type 51 pilot valve is built by A. W. Cash Co., Dept. CP, PO Box 551, Decatur, Ill. . . . or for more information reader may simply check CP 1863 on form which is located opposite last page.)

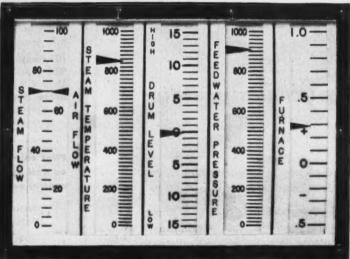
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at the Milton Roy exhibit,

"25th Exposition of the Chemical Industries," Dec. 5-9, Convention Hall, Philadelphia, Booth 313.



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NEW REPUBLIC



Individual, Independent Measuring Units for

DRAFT • PRESSURE AND VACUUM • DIFFERENTIAL PRESSURE • TEMPERATURE High Accuracy Receivers for Pnuematic Transmitters and Electric Meters Measuring FLOW . PRESSURE . CO2 . DENSITY . LIQUID LEVEL . OTHER PROCESS VARIABLES

Important Features

- FIVE INCH ILLUMINATED SCALES
- INDEPENDENT, INTERCHANGEABLE UNITS
- MULTIPLE OR INDIVIDUAL MOUNTING - from one to eight units to a single case
- EASILY MOUNTED-no panel drilling necessary in most cases
- SCALES EASILY CHANGED OR COLOR-CODED
- POINTER MOTION REVERSIBLE
- . SIMPLIFIED CONNECTIONS AT BACK OF CASE
- REMOVAL FROM FRONT OR

Now you don't have to sacrifice instrument performance and readability to size considerations. With Republic's new line of smallsize V5 Gauges, you can save panel space, make more compact instrument groupings and still get the accuracy, sensitivity and readability you would expect from conventional sized instruments. Full sized diaphragms, bellows and helix units in V5 Gauges assure "big" gauge performance in an instrument that requires only one-fourth the panel space of conventional gauges. Five inch scales are almost flat and are indirectly illuminated as a standard feature for easy reading - even from a distance.

Write for New V5 Bulletin

REPUBLIC FLOW METERS

2240 Diversey Pkwy., Chicago 47, Illinois

INSTRUMENTATION & CONTROL

Tuning fork is standard for measuring frequency, counting . . .

> ratemeter measures frequency on fixed time basis, counts at 100 kc, or compares

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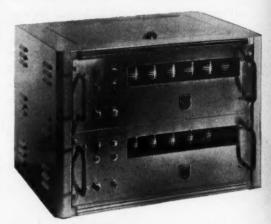
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Instrument operates as a ratemeter to measure frequency on a fixed time basis; as a period meter for counting to 10,000, 100,000, or 1,000,000 on a fixed count basis. It can also be used to compare ratio of two unknown signals.

Frequency standard of the unit is a tuning fork mounted in a controlled-temperature cabinet. When used as a comparator, tuning fork is out of the operation.

Description: Ratemeter is actually a combination of two modified decade scalers. These are mounted one above the other. Upper unit has manual controls for start, stop, and reset. It may be



Two decade scalers are in 21" wide cabinet

disconnected from lower unit and used inde pendently. Under normal operating conditions, upper unit is controlled by the lower unit. Thus both start simultaneously. Upper unit counts unknown frequency, lower unit is time interval generator.

Maximum counting rate is 100,000 counts per second. Minimum counting rate with sine waves is five cps. Resolving time is 10 microseconds for double pulses. Indication extends to 999,999. A mechanical register for sixth decade may be added to extend capacity to 999,999,999.

Sensitivity is such that a two-volt peak or 1/2 v rms sine wave can be detected with selector switch in negative position. In positive position, detection extends to a 1v rms signal. Power requirement is 250 watt at 100-125v 60 cycle. Unit is 21" wide.

(Type 12112 Ratemeter is a product of Research & Control Instruments Div., North American Philips Co., Inc., Dept. CP, 750 S. Fulton Ave., Mount Vernon, N. Y. Check CP 1865 opp. last page.)

NO

Meters low-pressure liquid fertilizers like ammonium phosphate and ammonia . . .

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cast-iron meters require only flushing with water when switching products

Uses: Metering liquid fertilizers, insecticides, defoliaging agents, petroleum products at bulk plants or on tank trucks.

Features: Six models handle flow rates from 20 to 800 gpm. Aqueous ammonia and ammonium phosphate are metered without difficulty, requiring only a water flush to switch from one to another.

Description: Meters are cast-iron. Positive-displacement measuring movement rotates on lowfriction bearings. Metal-to-metal contact is elimi-

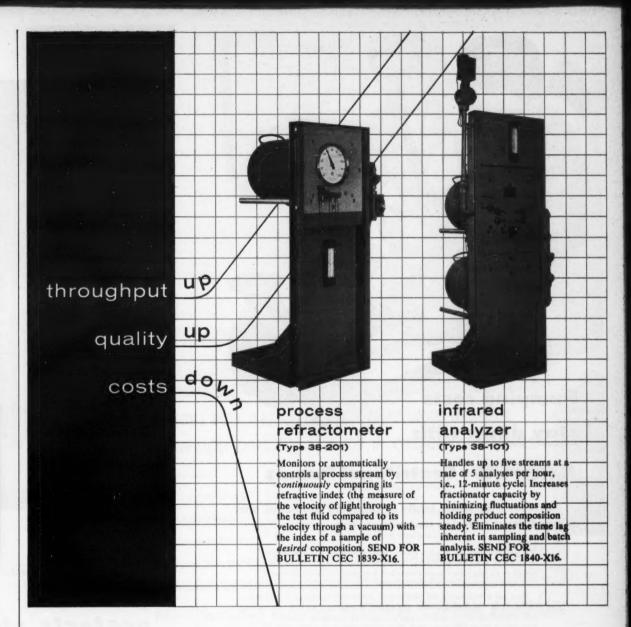


Brea Chemicals, Inc., of California, meters liquid fertilizers from tank truck to user with cast-iron meter

nated by liquid capillary seals between revolving rotor assembly and stationary member. Four bulk plant models, 2, 3, 4, and 6", operate at maximum flow rates of 100 to 800 gpm. Two tank truck models have maximum capacities of 100 and 200 gpm. All-ferrous accessories, including air eliminators, strainers, and shock-proof control valves, can be used with the meters.

(All-ferrous Rotocycle meters are product of Meter and Valve Division, Rockwell Manufacturing Company, Dept. CP, 400 N. Lexington Ave., Pittsburgh 8, Pa. . . . or check CP 1866 opp. last page.)

Fluidization Studies nomograph appears on page 224



Here are the first "Consolidated-Phillips" continuous process analyzers... units which provide analytical data while it's valid, before variables have changed. With these two instruments on stream, product quality and production go up...costs go down. You can install and maintain them for less, on an hourly basis, than a laboratory technician's salary. Both instruments are completely explosion- and weather-proof.

Consolidated-Phillips process analyzers have been proving their ability... and dependability... under actual plant conditions for several years. Originally designed and formerly manufactured by Phillips Petroleum Company, they are now backed by Consolidated Engineering's nationwide service organization... assurance of interruption-free operation for years to come at the pace demanded by modern refinery practice.

Whether your process instrumentation needs are for a single unit or a complete analysis-andcontrol system, you'll find it will pay to talk to a CEC Field Engineer. Write us today

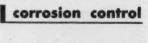
Consolidated Engineering

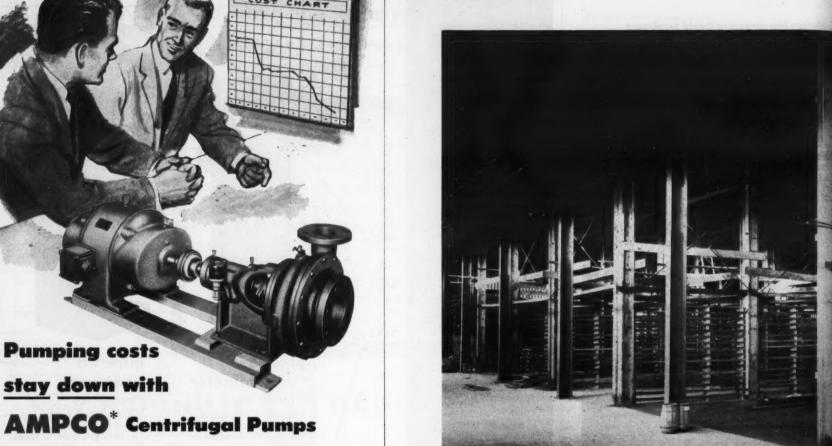
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FOR MEASUREMENT AND CONTROL
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Pasadena 15, California

When inquiring check CP 1867 opposite last page





Fertilizer is poured on wood trays placed between steel columns

Ste

NO

Use of chlorinated rubber coatings on interior of fertilizer mixing building -

protects structural steel from corrosive chemicals

For three years enamel has withstood ammonia gas, nitric acid fumes, acid phosphate dust containing sulfuric acid and phosphoric acid, ammonium sulfate, and potassium chloride salts

Lincoln Service & Supply Problem: Co., Grand Island, Nebraska, had to protect a large steel structure - inside and outside - from a variety of corrosive chemicals. Interior of the building had to withstand direct assault from ammonia gas, nitric acid fumes, phosphate dust containing free sulfuric and phosphoric acid, ammonium sulfate, and potassium chloride salts.

Exterior of building was less directly affected by the corrosives but presented



... because they adapt easily to changing conditions and demand, resist corrosion and erosion, save power

> When you buy an Ampco Pump, you're making an investment in years of low-cost pumping. You get a pump made from Ampco Metal — or any other workable alloy you need — to withstand corrosion and erosion in your process.

You get a well-designed pump with unusually stable characteristics - one that can handle wide variations in demand without chattering and pounding, or causing excessive wear on piping or valves. You get a high-efficiency unit that saves power - reductions of 25% to 60% in power requirements are not unusual with Ampco Pumps on the job.

Better still, you get an off-the-shelf pump that can be equipped more than 108 different ways to meet your requirements. For example, you select your shaft from standard, heavy, extra-rigid, or two-piece types. Bearings are prepacked, replenishable-grease or oil-lubricated, single or double width, as you wish. You choose shaft seals, impeller types, and pedestal heights all with the same basic pump.

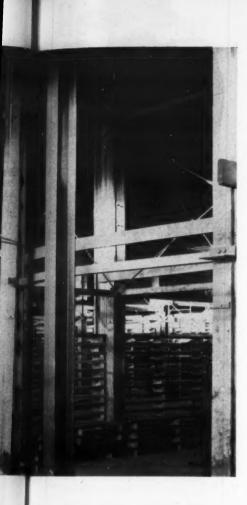
And get this! If your pumping conditions change, you can adapt this pump in the field, quickly and inexpensively.

Keep your pumping costs at an all time low with Ampco Centrifugal Pumps. Speeds, 1750 and 3500 rpm. Capacities to 600 gpm, head, to 300 feet. Write for literature.

AMPCO METAL, INC. Dept. CP-11, Milwaukee 46, Wisconsin

West Coast Plant Burbank, California

When inquiring check CP 1868 opposite last page



the additional problem of requiring resistance to weathering.

Steel structure involved is the company's fertilizer mixing building. In this building fertilizer mix is poured on large wood trays placed between steel columns. Material sets up as hard as cement. Fertilizer is blasted into manageable chunks with dynamite and passed through a pulverizer prior to packaging.

(Continued on page 95)



Exterior of building is protected by a long-oil alkyd, rust-penetrating coating



Manufactured only by NATIONAL CARBON COMPANY

■ Only the unique combination of properties provided by "Karbate" brand impervious graphite can virtually *eliminate* corrosion, contamination and thermal shock from your processes. You'll be pleased with the hidden economies you realize after replacing hitherto "satisfactory" process units with "Karbate" equipment. Let us bring you up to date on the latest designs in this outstanding material. And remember — your operating-cost sheets don't have to be *bad* to be *bettered!*

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Sales Offices: Atlanta, Chicago, Dallas, Kansas City, Los Angeles, New York, Pittsburgh, San Francisco IN CANADA: Union Carbide Canada Limited, Toronto



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Heat Exchangers— Catalog Sections \$-8740 and \$-8840



Cascada Coolars-Catalog Section S-8820 HCI Absorbers— Catalog Section S-7480

When inquiring check CP 1869 opposite last page

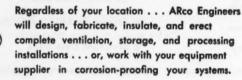


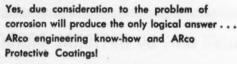
ARCO RUBBER PROTECTIVE LININGS and COATINGS



 Whenever there's the slightest evidence of corrosion, there's the beginning of future losses . . . down-time, equipment and customers.

Even before this menace appears; ARco Engineers and ARco Anti-Corrosion Rubber Protective Coatings should be considered . . . for the long term savings they will deliver for a reasonable initial cost.









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ARco Field Service Engineers bring complete technical know-how and facilities right into your plant. Permanent installations or equipment too large to move can be fabricated and covered right on the job by our Field Service Units.



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ARCO Rubber Processors
4033 HOMESTEAD ROAD • HOUSTON, TEXAS

When inquiring check CP 1870 opposite last page

CORROSION CONTROL

Excellent cathodic protection provided by zinc anode containing aluminum . . .

maintains high current over extended periods

Uses: As an anode to prevent electrolytic corrosion of metallic surfaces.

Features: Anode maintains high, and constant potential over long periods of time.

Description: Inter-Alloy is an alloy of zinc with spun aluminum in it. Results of tests completed in sea water against an iron cathode are given in the table below:

Electrochemical Pressure in Microvolts

After 48 hours After 200 hours After 400 hours
1055 950 950

Electr. Resistance Inside (ohms)

8 8 14

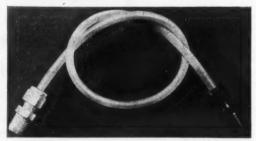
Electr. Current in Milliamperes
0.8 0.20 0.08

Other tests show that after twelve months immersion in sea water iron without any protection lost 1.93 gm/sq decimeter. Iron protected with Inter-Alloy lost 0.10 gm/sq decimeter.

(Al-Zn anodes are products of International Processes, Inc., Dept. CP, 624 S. Michigan Ave., Chicago 5, Ill. . . . or for more information check CP 1871 on form opposite last page.)

Fitting corrosion eliminated using plastic fittings with plastic tube . . .

can be applied without sleeves or inserts



Plastic tube fitting on the left can be installed without sleeves or inserts. On the right is brass fitting

Polyamide resin fittings for plastic tubing are designed for installations where corrosion is a problem. Fittings are available in elbows, tees, reducers, plugs, caps, and bulkheads. Patented design provides strong, torque-free, leakproof seals or joints at all tubing connections. No sleeves or inserts are necessary.

("Swagelok" tube fittings are produced by Crawford Fitting Co., Dept. CP, 884 East 140th Street, Cleveland 10, Ohio . . . for more information check CP 1872 opposite last page.)



Acid, Solvent, Alkali-Proof PERMANITE Diaphragm VALVES

Permanite is a furan resin developed by the Maurice Knight Company for use in corrosion-proof chemical equipment. It provides a valve extremely resistant to chemical attack.

Permanite Valves have flexible diaphragms actuated between metal bonnets and the Permanite body. Working parts are separated from the fluid flow by the diaphragm. This eliminates the nuisance of stem packing and prevents contamination of the product by leakage through the stem.

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In a majority of cases a maximum operating temperature of 180 degrees is practical. In some services, temperatures as high as 220 degrees can be handled. Higher temperatures require specially compounded heat resistant diaphragms.

Valve diaphragms are available made of rubber, Neoprene and Teflon. Other materials can be supplied on special order.

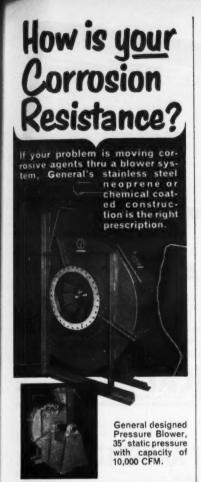
Stock sizes are 1", 1½", 2", and 3" bore.

Maurice A. Knight

411 Kelly Ave., Akron 9, O.

Booth 7 at Chemical Show When inquiring check CP 1873 opposite last page

CHEMICAL PROCESSING



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Blower failures, occurring within 6 month to two year periods, prompted Liquid Carbonic Corporation's Cincinnati plant to install this General Blower design. The blower is designed to handle highly corrosive flu gases. After 5 years of service, the fans are unaffected. Similar installations have since been made in other Liquid Carbonic plants. We invite you to consult with our engineering department if your problem is moving air, heat, gases, or materials.



8603 FERRIS AVENUE . MORTON GROVE, ILL.

When inquiring check CP 1874 opposite last page

Argonne develops processes for preventing corrosion of Al above 500°F...

results of research, aimed at nuclear uses, show promise in chemical processing field

Problem: Commercially pure aluminum corrodes smoothly at a reasonably low rate in pure water at temperatures up to about 400°F. Above this temperature, corrosion shifts to a penetrating attack, with the formation of mixed metal and oxide at an accelerating rate. This type of attack weakens the metal and at temperatures of about 600°F rapidly converts metal to oxide. Penetration of metal by hydrogen, produced in corroding process, is responsible for accelerating attack.

Solution: Two methods of preventing aluminum corrosion at elevated temperatures were developed by Argonne National Laboratory's Metallurgy Division. The first method consists of incorporating ½ to 1% of nickel and iron in aluminum. The other method involves addition of minute amounts of nickel sulfate to water contacting aluminum.

Results: Nickel-iron-aluminum alloy is impervious to penetrating corrosion up to 660°F. Nickel sulfate, acidified-water system protects commercially pure aluminum up to temperatures of 530°F.

These methods, worked out for nuclear applications, suggest that results of research can be used to advantage in chemical processing operations.

(Research work on preventing corrosion of aluminum at high temperatures was conducted by Dr. Joseph E. Draley, Senior Chemist, and Mr. W. E. Ruther, Metallurgy Div., Argonne National Laboratory, Dept. CP, PO Box 299, Lemont, Ill.)

Improved deposit efficiency obtained with alloy hard-facing powders . . .

nickel-chromium-boron products provide good corrosion resistance

Series of alloy powders for hard-facing, where resistance to corrosion and abrasion is required, improves deposit efficiency. These powders, of the nickel-chromium-boron type, provide as much as 10 percent improvement in deposit efficiency.

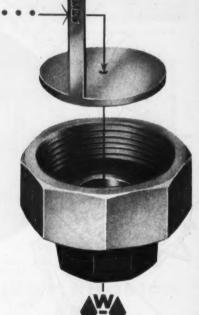
All of the three hard-facing alloys announced have excellent corrosion resistance and weldability, good impact and galling resistance, and good abrasion resistance. Rockwell hardness runs 35 to 60 on the C scale and melting point about 2000°F.

(No. 4, 5, and 6 hard-facing alloy powders are products of Wall Colmonoy Corp., Dept. CP, 19345 John R St., Detroit 3, Mich. . . . or for more information check CP 1875 opposite last page.)

THIS "TAB"
TELLS YOU WHY ...

You Can't Mistake
the Orifice Size
with
WATSON-STILLMAN
Tab Orifice Unions





Ever get in the spot where you weren't sure of the orifice size in a union installed in the line? It has happened to the best of us... but it needn't happen again. With the W-S Tab Orifice Union you're always sure of the orifice size. It's plainly stamped on a tab that protrudes through a slot in the end piece of the union. The tab is an integral part of the stainless steel orifice plate.

The slot opening in the end piece simplifies removal and replacement of the orifice plate. Just unscrew and pull back the nut. The plate slides out easily. The connecting pipes need not be pulled back any farther than required to slip the orifice plate from between the two union ends.

Watson-Stillman Tab Orifice Unions* are available in 3000 lb. class. For complete size, dimension and price information send today for Data Sheet SU-1.

*Manufactured under Esso Research and Engineering Company License Agreement—U. S. Patent #2,661,768

WATSON-STILLMAN FITTINGS DIVISION

HKP H. K. PORTER COMPANY, INC.

When inquiring check CP 1876 opposite last page

COROCRETE



NEW CORROSION-PROOF SURFACING FOR FLOORS

COROCRETE... Ceilcote's newest advancement in the continuous search for better corrosion-proof materials... provides greater protection than conventional acid-proof floor materials... at considerable savings.

Developed for diversified applications in the chemical processing, food processing, plating and metal working industries, COROCRETE is quickly and easily applied over existing concrete surfaces . . . handles like cement topping. Thicknesses from 1/4-inch minimum to 3/6-inch maximum (per layer) are recommended for best results.

Write today for trial sample of COROCRETE



THE CEILCOTE COMPANY INC.

4834 Ridge Road

Cleveland 9; Ohio

When inquiring check CP 1877 opposite last page

CORROSION

Explosion-proof pump handles corrosive, hazardous liquids

Uses: Pumps corrosive and hazardous materials such as nitric, phosphoric, and other acids, caustic alkalis, flammable solvents, plasticizers.

Features: Unit is explosionproof. Various modifications are optional, including several alloys and non-metallic rotors, as well as Teflon-ceramic shaft seal.

Description: Positive displacement, stainless steel pump is driven by a manually-adjustable air motor. Pumping speed is closely controlled by a single adjustment.



Pump is driven by manually-adjustable air motor

Unit handles non-abrasive fluids at flow rates to 10 gpm at pressures to 100 psig. It is self-priming with non-volatile fluids, thus eliminating physical exposure to hazardous materials.

(All-Chem explosion-proof pump is a product of Eco Engineering Company, Dept. CP, 12 New York Ave., Newark, N. J. Check CP 1878 opp. last page.)

Globe valve schematics are featured

Design factors, designations, and applications of stainless alloys are included in this four-page, two-color booklet. Sixteen schematic drawings depict valve designs.

Bulletin 55A is issued by the Cooper Alloy Corp., Dept. CP, 100 Bloy St., Hillside, N.J. Specify CP 1879 opp. last page.



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Your own guide to what kind of paint to use for every heavy-duty job. Gives you the benefit of our accumulated experience...70 years of specializing in industrial maintenance paints. Write for your free copy TODAY!

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When inquiring check CP 1880 opposite last page



gives lowest cost with permanence for Instrument and Control Tubing This construction of CRESCENT ARMORED

This construction of CRESCENT ARMORED MULTITUBE may be laid in a deep trench for long underground runs without any further protection other than that offered by its lead sheath, asphalted jute, two layers of heavy galvanized flat steel armor with an asphalt impregnated jute outer covering.

impregnated jute outer covering.

The economy of this method is obvious. Also the copper tubes are completely safe from mechanical injury, and the thick asphalted jute coverings protect the metal from moisture, corrosion, earth acids and alkales. Under road crossings where very heavy traffic is encountered, it may be buried in concrete poured into the bottom of the trench or it may be pulled through conduit.

may be pulled through conduit.

Up to 37 — ¼" O.D. copper tubes may be furnished in this and several other forms of CRESCENT ARMORED MULTITUBE, one of which should best suit your installation requirements at substantial cost savings and resulting in a better protected job.

Licensed under U.S. Patent 2,578,280.



Send for Bulletin

CRESCENT INSULATED WIRE & CABLE CO.

TAYLOR ST. TRENTON 5, N.J.

When inquiring check CP 1881 opposite last page

CHLORINATED RUBBER COATINGS

(Continued from page 91)

Solution: In October 1952 entire building was coated by following procedure. Metal was cleaned and swept with brooms to make sure it was dirtfree. Interior was first coated with quick-drying primer. Three coats of chlorinated rubber enamel were then applied.

Exterior was primed with the quick-drying coating and two coats of a long-oil alkyd, rust-penetrating metal paint applied. All coats on both interior and exterior were applied by spray.

Results: Both the interior and exterior of the steel building are still in good condition after three years exposure to the corrosive chemicals and weather.

(Torex chlorinated rubber enamel and Rustarmor alkyd coating are products of Inertol Co., Inc., Dept. CP, 480 Frelinghuysen Ave., Newark 5, N.J. Check CP 1882 opposite last page.)

(Parlon chlorinated rubber on which Torex enamel is based is a product of Hercules Powder Co., Dept. CP, 940 Market St., Wilmington 99, Del. Check CP 1882A opposite last page.)

Fiber glass filter cartridge furnishes good chemical, temperature resistance

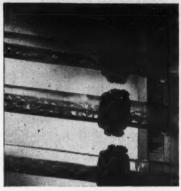
High chemical and temperature resistance are provided by glass fiber filter cartridge designed to fit standard filter containers. Cylinders made of the non-absorbent material are offered in 2, 10, 25, and 50 micron grades. Each cylinder is lined with



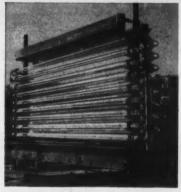
Filter cartridge has non-absorbent structure

glass fiber cloth to insure lint-free filtration.

(Glas-Kleer filter cartridge is product of Porous Plastic Filter Co., Inc., Div. of The Pall Filtration Companies, Dept. CP, 30 Sea Cliff Ave., Glen Cove, N.Y. Check CP 1883 opposite last page.)



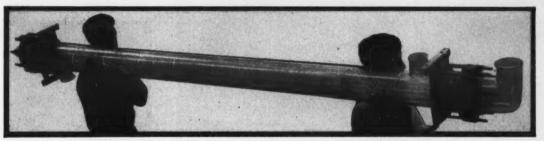
PYREX brand glass pipe lets you transport corrosive and sensitive fluids safely.



. Pyrex brand glass cascade heat exchanger—an extremely versatile unit.



PYREX brand glass fractionating column lets you see fluids in process.



Pyrex brand shell and tube heat exchanger—fluids contact only Pyrex brand glass No. 7740, chemically resistant ceramic and Teflon. You get complete, low-cost corrosion protection.

PYREX brand glass processing equipment

to help you stop corrosion

Where you handle corrosive fluids or fluids sensitive to metallic contamination, you can have complete processing safety with this Pyrex brand equipment

You can use glass equipment for all acidic solutions and acids except hydrofluoric. Your fluids are safe in chemically stable glass because glass will not take from or add to them.

Because it's transparent, glass lets you see product in flow and check its condition at any point. With glass equipment, you save on cleaning because you clean in place, quickly. Initial costs and costs of upkeep are low.

To get additional information on this equipment and to find specifically how you can save money and improve processes, contact the distributor near you or write, wire or phone Corning.

PYREX brand glass pipe

Noncorroding and nonclogging PYREX brand glass pipe comes in I.D.'s from 1" to 6" and in any lengths up to 10', with fittings for even the most complex layout. Your own men can install it.

PYREX brand cascade heat exchanger

Thin-walled, highly efficient... offers you extreme corrosion resistance and low cost per BTU transferred. Uses low-cost river or sea water for coolant. Mount on floors, walls, ceilings, roofs. Expandable.

PYREX brand glass fractionating columns

See fluids in process. Supplied in 4", 6", 12" and 18" diameter sizes with any number of plates. For laboratory, pilot plant or production requirements.

PYREX brand shell and tube heat exchanger

Gives you complete corrosion protection. Has no internally exposed metallic parts—fluids contact only Pyrex brand glass No. 7740, chemically resistant ceramic and Teflon. Maintains freedom from deposits for lasting high efficiency. In 50 sq. ft. and 13 sq. ft.

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REEVES

Vari-Speed Motor Pulley

This simple, compact REEVES unit provides an economical way to widen machine range, and an efficient method of adjusting work flow to changing conditions. Speed variations are effected smoothly and instantly-without stopping the machine! Unit also available without motor. For bulletin complete with rating charts and dimensions, write Department CP18-V545.

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Heavy duty-2:1 to 16:1



Compact-2:1 to 6:1



Flexi-Speed Versatile, economical-8:1 range—1/2, 34 and 1 hp.

The wide range of REEVES variable speed equipment is now supplemented by the line of Reliance drives. Now-more than ever-you can rely on your REEVES representative for the answer to any speed control problem.

REEVES PULLEY COMPANY, COLUMBUS, INDIANA Division of RELIANCE Electric and Engineering Co.

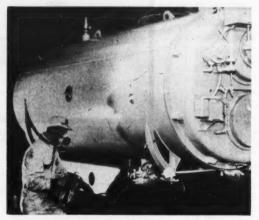
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CORROSION CONTROL

Temperatures up to 500°F resisted for four years by silicone finishes . . .

> coatings have been used on boilers without failure in field

Silicone heat-resistant finishes have been used for four years on a line of packaged boilers, manufactured by Cleaver Brooks Company of Milwaukee, without a failure in the field, as far as is known. Coatings must withstand temperatures up to 500°F. In addition to having excellent heat resistance, the coatings have a fine appearance and are easily applied.



Silicone finish being applied to packaged boiler

Gray finishes have been used since 1951 and red since 1952. Coatings have retained their color and gloss satisfactorily.

(Sicon silicone finishes are product of Midland Industrial Finishes Co., Dept. CP, East Water St., Waukegan, Ill. . . . or for more information check CP 1886 on form opposite last page.)

Comprehensive guide on selection of specialty steels

Distinctive characteristics of a broad range of special purpose steels, in terms of end use, are defined in 32-page illustrated guide. Tool and die steels; stainless steels; silicon and high nickel electrical alloys; special purpose alloy steels; valve, heat-resisting, and super alloy steels; tubing and pipe in various analyses, and fine wire specialties are covered.

Corollary information is given on quality control necessary in manufacture of specialty steels.

"A guide to Specialty Steel" is available from Carpenter Steel Co., Dept. CP, 3067 West Bern St., Reading, Pa. When inquiring specify CP 1887 on form opposite last page.

Add To Your **INVENTORY OF** INFORMATION



...You'll be glad to have on hand these technical bulletins on protective coatings for chemical environments.

Yours for the Asking

Technical information on...

- Catalyzed Epoxy protective coatings.
- Non-Catalyzed Epoxy protective
- Plasticized Neoprene coatings.
- Chlorinated (Parlon) protective coatings.
- Copolymer protective coatings.
- Chinese Wood-oil Phenolic coatings.
- Polyvinyl Acetate coatings.

Our informative bulletins on these coatings present data on application, activation, preparation, priming, coverage, color, drying and resistance.

Rowe products are custom made to protect interior and exterior surfaces of chemical plants.

Write on company letterhead to Dept. P

ROWE PAINT & VARNI/H CO.. . Inc.

COLLEGE AVE. AND HYDE PARK BOULEVARD NIAGARA FALLS, NEW YORK

When inquiring check CP 1888 opposite last page

CHEMICAL PROCESSING

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Chemical treatment controls corrosion in oil wells . . .

inhibitor is effective in sweet and sour crude

Uses: As a corrosion inhibitor in both sweet and sour oil wells.

Features: Its outstanding efficiency: inhibitor passes through casing oil layer and rapidly disperses in underlying brine. It is preferentially adsorbed as an impervious film on the metal surfaces of pumps, tubing, rods, and flow lines. Inhibitor prevents localized attack or pitting action and minimizes such attack during periods of treatment interruption.

Description: Inhibitor is a strongly polar-type organic incorporated in a non-oil-soluble, water dispersible, liquid carrier. Recommended dosage is about 50 ppm of produced brine. It may be introduced into the well by any convenient means, including intermittent, or continuous pumping or by batch application. Inhibitor has a flash point of 75°F, pour point of -30°F, and weight of 7.96 lb/gal.

01

S.

(Endcor 50 is a product of Dearborn Chemical Co., Dept. CP, Merchandise Mart Plaza, Chicago 54, Ind. . . . or check CP 1889 opposite last page.)

Stainless steel exchanger resists corrosion

Cutaway view illustrates design features of 316 stainlesssteel heat exchanger in fourpage, two-color catalog. Styles, sizes, dimensions, weights, and materials are given.

Catalog 1155 is available from Young Radiator Co., Dept. CP, 724 Marquette St., Racine, Wisconsin. When inquiring specify CP 1890 opp. last page.

For more information on product at right, specify CP 1891
. . . see information request blank opposite last page.

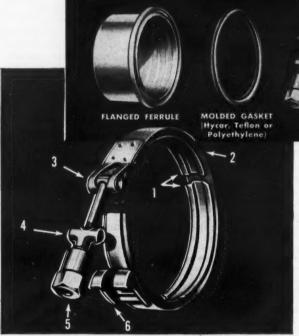
CUT PIPING COSTS

... with the NEW

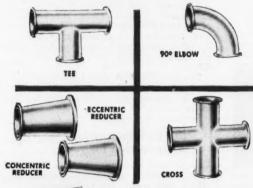
TRI-GLAMF

Schedule 5-10 and Tube O.D.

STAINLESS STEEL INDUSTRIAL FITTINGS



Tri-Clamp Industrial Type Stainless Steel Fittings are available in all standard types, in sizes from 1" through 12". Fittings are fabricated from type 304 and 316 stainless steel, and sizes through 4" are annealed, pickled and passivated.



Send for NEW Bulletin . .

Complete details on TRI-CLAMP Industrial Type Stainless Steel Fittings are covered in the new Bulletin 1055. Send for your copy now.

See the TRI-CLOVER Exhibit — 1955 Chemical Show — Booth 26

Simple Rugged Construction Assures Fast Positive Leak-Tight Joints

FLANGED FERRULE

1. RETAINER SECTIONS grip flanged ferrules securely, assures proper alignment.

TRI-CLAMP

- 2. TENSION BAND equalizes pressure around joint, holds clamp in position for quick connection.
- 3. TRUNNION is of simple design, provides fast locking and unlocking action.
- 4. "T" LATCH assembly easily snaps into position in Coupler (6) and is held in position by tightening nut (5).
- 5. TENSION NUT, easily tightened with ordinary hex wrench.
- COUPLER SEAT, holds Latch securely in place to complete positive, leak-tight joint.

As illustrated, the TRI-CLAMP Joint consists of a flange type ferrule—a special precision molded gasket which fits into the grooved ferrule lip—and the TRI-CLAMP itself, which is composed of a specially fabricated spring clamp which grips the ferrule edges, and a simple, bolt-type coupler assembly firmly secured to the clamp ring... always in position for instant assembly or disassembly.

All that is necessary for installation is to attach the ferrules to stainless steel tubing or pipe, insert gasket into position, slip TRI-CLAMP over ferrules and gasket and tighten into closed position—to produce a positive, leak-tight joint.

TRI-CLAMP Stainless Steel Fittings offer an entirely new concept of fitting design and fabrication, offering much greater speed and ease of installation, together with appreciable savings in original investment cost, and longer trouble-free life for many types of corrosion-resistant liquid conveying line service.

See your nearest Tri-Clover distributor, or write:



LADISH CO.

Tri-Clover Division
Kenosha Wisconsin

Corrosioneering News



Published by The Pfaudler Co., Rochester, N.Y.

WORLD PREMIERE

1955 Chemical Show sees debut of several New Achievements in Glassed Steel Construction

No contamination, no leakage with new seal for reactors



No metallic contamination of your product. No stray, unwanted catalysts. No escaping vapors.

These are the advantages of a new nonmetallic rotary Crane-type seal now available on Pfaudler glassed or stainless steel reactors up to 100 gallons. (A similar de-

sign is also available for larger units.)
Only Pfaudler glass, Teflon, ceramic and carbon come into contact with your product. Design of the seal is simple, easily maintained.

New development boosts corrosion resistance of columns

Better results from fractionation and other processes requiring a column are now possible with the added corrosion resistance of a new Pfaudler development.

It's a glassed steel distributor plate, available for all size columns. Using Pfaudler acid-alkali-resistant glass, this plate provides complete flexibility of use over a range up to pH 12 at

The corrosion resistance of this glass protects product purity, simplifies cleaning, and protects your equipment investment.

Dryer-blender tumbles out 4 days' work in 7 hours

In actual use, a Pfaudler glassed steel conical dryer-blender is producing as much dried product in 7 hours as formerly required at least 4 working days, using a different type of dryer.

Double-cone shape, tumbling action and efficient heating design are responsible for this great speed. In addition, a broad range of corrosive applications is possible, because the unit is fabricated of Pfaudler's special acid-alkali-resistant glassed steel.

To pre-test your product in the Pfaudler dryer-blender, a small 2'-



diameter test model is available. You'll see it at the Chem Show - or write us for full details.

New Pfaudler hydraulic drive and seal

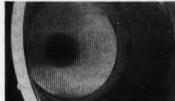
The new Pfaudler hydraulic drive and seal offers many advantages: It can be made in both stainless steel and glassed steel construction for a large range of reactor sizes and for greater horsepower requirements with either hydraulic or air motors.

Any noncorrosive fluid can be used as a seal - even one of the ingredients of your own product - providing you 100% protection against contamina-

This seal is operated under pressure, requires a minimum of maintenance, and is designed to give years of trouble-free service. Your Pfaudler representative can provide full details at your request.

New Turbogrid tray gives higher yield at lower cost

You're looking down the throat of a Pfaudler glassed steel Turbogrid



column, at a new tray design that provides enormously high capacities, yet lowers the cost of the column

The tray is constructed of high-strength PYREX brand glass tubes,



Cutaway column, providing an unusual view of the "business side" of Pfaudler glassed steel construction, is a feature attraction at Chemical Industries Exposition. Philadelphia.

with all their inherent advantages of corrosion resistance, physical toughness, and thermal shock resistance.

Because of the high capacity resulting from this design, the column itself can be of smaller diameter than previously required - an important means of cutting its cost.

Now-variable agitator speeds ranging from 60 to 340 RPM

Six different agitator speeds: 60, 90, 120, 175, 250, and 340 RPM are now available on Pfaudler reactors up to 100 gallons.

These are made possible by interchangeable constant-speed sheaves of the new PW drive. As an alternative, variable pitch sheaves may be supplied, giving quick adjustment for all speeds ranging from 60 to 300

The new PW drive rides high above the top head of the reactor, out of the way so you can have easy access to other nozzles.

Write for Bulletin 923.

Which material of construction for you?

Glassed steel, stainless, titanium, Inconel, Hastelloy, copper and copper alloys, and many other corrosionresistant materials are commonly used by Pfaudler to solve processing problems. Write today for free, un-biased analysis of your problem.

CORROSION CONTROL

Solvent welding pipe fittings of injection-molded unplasticized PVC . . .

high density and homogeneity give excellent corrosion resistance

Asp

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Coal

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Piping systems in the chemical, food, drug, and petroleum industries or wherever corrosion is a problem.

Features: Solvent welding fittings of unplasticized polyvinyl chloride are first to be produced on commercial scale by injection molding process. Solvent welding permits fast, easy installation with minimum of tools and equipment.

Description: Injection-molded units have high density and homogeneity. They are corrosion resistant and result in durable installations. Solvent welding fittings are recommended where installa-



Unplasticized PVC pipe fittings were produced by injection molding

tions are of a permanent nature. Line includes 90° and 45° elbows, tees, unions, couplings, caps, reducing bushings, and flanges.

(Solvent welding pipe fittings are a product of Tube Turns Plastics, Inc., Dept. CP, 224 East Broadway, Louisville 1, Kentucky . . . or for more information check CP 1893 on form which is located opposite last page.)

Variation of load at yield - 304 stainless

Series of charts shows variation of load at yield of type 304 stainless steel tubing when held by manufacturer's Swagelok tube fittings. Test data are given on 1/2, 3/4, and 1" sizes in various wall thicknesses and in pressures at temps ranging from room through 1800°F. There are two charts accompanied by a table.

Charts are available from Crawford Fitting Co., Dept. CP, 884 E. 140th St., Cleveland 10, Ohio. When inquiring check CP 1894 on form which is located opposite last page.

Asphalt-based coatings are described

nt

on

Uses and specifications sheets summarize features of five asphalt based coatings used as vapor and weather barriers. A separate summary sheet reviews all coatings briefly. Nokorode vehicle, construction asphalts, seam and backing cement, brush cement, vapor and weather barriers and accessories are covered.

Data sheets on coatings are issued by Lion Oil Co., Dept. CP, El Dorado, Ark. Specify CP 1895 opposite last page.

Single wrap of tape protects pipe . . .

separator film eases application

Coal tar wrapping tape for pipe, pipe fittings, joints, and couplings gives effective protection with a single wrap application, with only 1/2" overlap. Conventional tape required overlap of more than half of tape width. Single wrapping permits additional coverage of pipe with a given length of

(Continued on next page)



Extra coverage furnished by single-wrap method in contrast to double-wrapping

For more information on product at right, specify CP 1896 see information request blank opposite last page.

NG





TECHNICAL DATA ON STAINLESS STEEL VALVES

A twelve-page technical data booklet covering stainless steel valve design, selection, maintenance and repair has just been announced by our Valve and Fitting Division. Printed to form part of the new catalog, the technical section is being offered separately on request. Photographs, engineering drawings and cut-a-ways combine to make this a very complete, yet condensed, discussion of stainless valves. Ask for Bulletin VTD.

PUMPING 65% HF AND 40% H2SO4

No stuffing box! No gasket! No shaft seals!

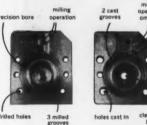


Pumping 65% HF is tough enough, but when service requirements also include 40% H₂SO, the problem is really rough. An alert primary metals producer found the answer by replacing two conventional pumps with a Vanton "flex-iliner" self priming pump and two alternate liners. Model PX60-10 gpm-with a polyethylene body block, a gum rubber liner for the HF and a neoprene liner for the H2SO, did the trick. Two trouble free plastic pumps in one!

When it comes to pumping those tough corrosive liquids and abrasive slurries, there's no pump like a Vanton!

Catalog VP 55 on request.

IN CASTING PUMP PARTS. ADVANCED KNOW-HOW MAKES THE DIFFERENCE



BEFORE

Machining time on the stainless steel housing for the Vanton "flex-i-liner" pump was cut from 14 hours down to 2 through the use of shell cores; weight was reduced and drilling simplified through casting redesign; and the use of shellcast® eliminated the milling on the end plates, making it economical to produce them in stainless steel instead of aluminum. This resulted in a better product in less time and for less money thanks to Cooper Alloy Advanced Know-How.

For Full details on this specific application write for free copy of case study #2.

QUIKUPL® Cuts Costs on Vinegar Lines

It's been almost two years since **Edward Parish of Standard Products** Company in Philadelphia specified QUIKUPL ells, tees and unions for his 11/2" hot and cold vinegar lines, but he still keeps talking about the fact that the installation was made without the plumbing tool complement usually required for setting in such a

"We had the lines in so fast that it was hard to believe-and the time and labor saving repeats itself at our frequent clean-out and internal inspection periods," Mr. Paris told us. "Before using QUIKUPL it was necessary to silver solder and braze all plumbing joints running from the orifice of the outside vinegar storage tanks through the filtration system hookup and the pasteurizer to the filling machine. QUIKUPL dismantling and erection time is considerably less than that required by our old method -and that means less shut-down and less labor.'

The vinegar processing system operates alternately at room temperature and 180° F.

BOOTH 602 AT THE CHEM SHOW

Three hundred and sixty square feet of exhibit space referred to as Booth 602 will be devoted to telling how Advanced Know-How makes the difference in corrosion resistant Castings, Valves, Fittings and Pumps. There will be plenty of products on display, plus working and cut-a-way models. Our key people will be on hand to greet you and assist in any way possible. We hope you'll stop by.



COOPER ALLOY

🖒 FOUNDRY PRODUCTS DIVISION - 🚯 VALVE & FITTING DIVISION - 👺 VANTON PUMP & EQUIPMENT CORPORATION.



When inquiring check CP 1897 opposite last page

CORROSION

(Continued from preceding page)

tape. Separator film facilitates unrolling and requires no special treatment in processing. Tape is available in widths of 2, 3, 4, 6".

(Tapecoat-X is product of Tapecoat Co., Dept. CP, 1523 Lyons Street, Evanston, Illinois . . . or check CP 1898 opposite last page.)

Handles solids in suspension and corrosive liquids . . .

rubber sleeve valve features; dual control

Uses: Controls flow of solids in suspension, such as coal slurry, paper pulp, and sand, or corrosive liquids.

Features: Valve design gives streamline flow characteristics with both fully open and throttl-



Valve is controlled manually by handwheel or automatically through pressure connection

ing settings. Dual control permits manual operation with hand-wheel or automatic operation through port at base of valve.

Description: Sleeves are available in pure gum rubber, neoprene, Buna N or S, or Butyl rubber. Valve body is aluminum and sizes range from 1 to 4".

(Rubber sleeve valves are produced by Red Jacket Co., Dept. CP, 500 Bell Ave., Carnegie, Pa. Check CP 1899 opposite last page.)

Write for
Latest Catalog
and Prices

"Metalsmiths" Stainless Steel and Monel Utensils

Prompt shipment —anywhere!

Order your next requirements in corresion-resistent utensiis from the quality "Metalsmiths" line. Latest catalog shows all stock items, sizes, prices. Order direct and compare "Metalsmiths" workmanship, quality materials, long, durable service. Over 30 years serving the trade.



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WRITE FOR LATEST CATALOG - PRICE LIST

METALSMITH

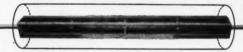
Division of Grange Rouer Bearing Co., in

556 White Street

Orange, N. J.

When inquiring check CP 1900 opposite last page

TRENT "FOLDED-AND-FORMED" HEATING UNITS THE ANSWER TO ROLLER HEATING PROBLEMS



When you're faced with the problem of drying paper, heating wax, glue or asphalt on rollers, you'll find your solution through the faster, higher, more uniform radiant heat furnished only by Trent "Folded-and-Formed" Roller Heating Units.

HERE'S WHY-

Trent "Folded-and-Formed" exposed ribbon type resistor heating elements radiate controlled, electrical heat from a special rack inside the roller. This compact, uniquely designed element assembly remains stationary while the roller revolves about it insuring rapid, uniform temperature along the surface of a roll of any length. Roller diameters can vary from 6" to 60".

Drying • Curing • Embossing • Evaporating
are accomplished faster, more effectively, and with
greater economy through the performance
of Trent "Folded-and-Formed" heating
elements. They are constructed to assure
maximum rigidity for long life and
easy maintenance even under hardest
use. They pay off in—

GREATER PRODUCTION
 HIGHER QUALITY
 LOWER COST

Trent Engineering Service
An experienced Trent engineer
will gladly survey your requirements to help you determine
the most efficient, economical
approach to your heating probloms. In the meantime, write
for the new Trent "Folded-andFermed" Heating Element Booklet.



When inquiring check CP 1901 opposite last page

CHEMICAL PROCESSING

Crevice corrosion controlled with procedures suggested by AEC work . . .

> research work with high purity water at 500°F applicable to industrial problems

Research work conducted for the Atomic Energy Commission, described in a recent technical paper, includes procedures used for controlling crevice

corrosion of metals used for handling high-purity water at temperatures of 500 to 600°F. Much of the data obtained are applicable to general industrial water problems, especially in boiler water systems.

Work was done on the more corrosion-resistant metals, all of those tested being subject to crevice corrosion in some degree. Crevice corrosion is usually dependent on oxygen. However, the bad effects of oxygen can be tolerated if clearances are maintained in excess of five mils.

Problem of crevice corrosion becomes less troublesome as temperature is lowered, especially with the more corrosion-resistant materials. Normally, extent of crevice corrosion found at 200°F amounts to nothing more

than a discoloration of the metal without any measurable buildup.

Example of crevice cor-

rosion in the form in which it usually occurs

In some cases pitting in crevices is more important than buildup. For example, Type 410 stainless steel is usually considered a good choice as a rivet material. However, in water at 200 to 500°F, crevice corrosion of this metal proceeds along the length of a rivet at a fairly rapid rate. This problem was solved by using a special high chromium and nickel stainless steel, Carpenter No. 10.

(Technical paper, "Corrosion Engineering Problems in High Purity Water," was prepared by D. J. DePaul, Westinghouse Electric Corp., Atomic Power Div., PO Box 1526, Pittsburgh 30, Pa. It was presented at the 1955 annual meeting of the National Association of Corrosion Engineers in Chicago.)

Check the Product Directory (starting this issue on page 237). You'll find it an easy "pagelocator" for ideas, materials, and services on corrosion control.



stretches wheel life from 6 weeks to better than one year in corrosive gases.



Fan rotor being metallized with silver for protection against corrosive gas

The Stauffer Chemical Company, Niagara Falls, N. Y., operates a chloro-organic acid unit in which process fans are used to convey corrosive gas in the operation of a column. Gas is primarily anhydrous hydrogen chloride, contaminated with small quantities of chloro-organic acid compounds.

A number of different coatings were tried out in an effort to prolong the life of the stainless steel wheels and shafts, as well as the cast-iron housings. Best of these lasted 4 to 6 weeks on the wheels, 2 to 4 months on the housings.

Test work carried on with Metal-Cladding, Inc., of North

Tonawanda, N. Y., indicated that fine silver was relatively unaffected by the gases in use. So the first wheel was metallized with this material after the base metal had been mechanically cleaned, sprayed with .005" of molybdenum for a bonding base, and .020" of nickel for toughness. Final silver coating was .025" thick.

A year later the first metallized surfaces were still in excellent condition. Since the cost of the metal spray work was about equal to the cost of a new untreated unit, the application paid for itself in about three months. In addition, inspection time and downtime were substantially reduced.

METCO SYSTEMS

The following Metco* System contractors are set up to help you solve your corrosion problems with metallizing. For further information or copy of descriptive bulletin, write, wire or phone Metco Systems headquarters, address and phone number below. *Reg. U.S. Pat. Off.

Metco System Contractors

Arthur Tickle

Akron Sand Blast Co. Dix Engineering Co., Inc. F. W. Gartner Company **Gulf Engineering** Company, Inc. Clark Metallizing, Inc. Metal-Cladding Inc.

M W Protective Coatings Div. of Metalweld, Inc. St. Louis Metallizing Co. The Southern Galvanizing Company

10 Bridge Street, Westbury, Long Island, N. Y.
Please send me descriptive bulletin on the Metco Systems.
name.

10 Bridge Street, Westbury, Long Island, New York

Metco Systems

Telephone: Edgewood 4-1308

When inquiring check CP 1902 opposite last page



When inquiring check CP 1903 opposite last page

CORROSION

Cuts, bends, crimps won't part vinvl from metal . . .

skin of plastic on metal sheets resists abrasion, corrosion

Large sheets of steel and aluminum with a "skin" of abrasion-resistant. corrosion-resistant, and rust-proof vinyl plastic are now being produced by a company in Denver at the rate of 4,000 sq ft an hour. Vinyl-clad metal sheets, measuring four by eight feet, combine structural strength of metal with bright colors and toughness of vinyl.

Plastic-coated sheets can be sheared, crimped, bent, drilled and punched with standard tools without separating vinyl from metal.

Vinyl is bonded to metal by the Marvibond process developed by Naugatuck Chemical division, U.S. Rubber Company. Process makes it possible to apply vinyl film or sheet of special composition and patterns to sheet metal at a high production

(Vinyl-clad metal sheets are a product of Clad-Rex Steel Company, Dept. CP, 2228 Blake, Denver, Colorado. . . . or for more information check CP 1904 on form opposite last page.)

Glass fibers utilized for reinforcement in plastic pipe

Corrosive service instal-Uses: lations.

Features: Pipe is constructed of a thermosetting resin reinforced with thousands of continuous filaments of fiberglass or other fibers.

Description: Lightweight plastic pipe can be installed without use of heavy equipment, and there is no need for a welding crew as it can be readily cemented or screwed

(3M brand reinforced plastic pipe is a development of Minnesota Mining and Manufacturing Co., Dept. CP, 900 Fauquier Street, St. Paul 6, Minn. . . . or for more information check CP 1905 on form opposite last page.)

MARSH Mastergauge

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Always the best of the better gauges, Mastergauge has been given plus features that further lengthen its lead.

A still better tube construction: Socket, tube and end piece are now all fused into one leak-tight unit by the new Marsh "Conoweld"

A still better case: New copper clad wrought steel "Marshalloy" case has the corrosion resistance of pure copper; weighs one third as much as cast iron, and is four times as strong.

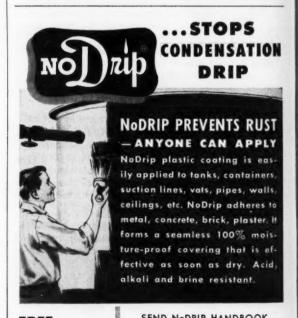
An even finer movement: Further refinements are added to the rugged, corrosion resistant, virtually frictionless stainless steel and monel Mastergauge movement. A typical refinement is the "Coined" (extruded) sector gear which contributes extra strength and precision.

Where only the best is good enough—in the most critical industrial refinery and oil country services—"Mastergauge" is your instrument.

WRITE FOR NEW CATALOG

MARSH INSTRUMENT CO. Sales affiliate of Jas. P. Marsh Corporation Dept. Z, Skokle, III. Houston Branch Plant: 1121 Rothwell St., Sect. 15, Houston, Texas Marsh Instrument & Valve Co. (Canada) Ltd., 8407 103rd St., Edmonton, Alta.

When inquiring check CP 1906 opposite last page



Interesting 32-page Handbook shows what NoDrip is and what it does. SEND COUPON TODAY

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DDRESS_		

J. W. MORTELL CO. +530-K BURCH ST. + KANKAKEE, ILL. **TECHNICAL COATINGS SINCE 1895**

When inquiring check CP 1907 opposite last page

CHEMICAL PROCESSING

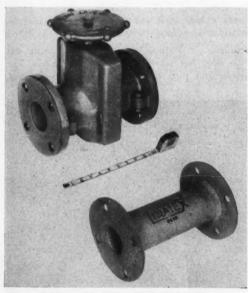
Free flow without clogging in any throttled position, full open to closed . . .

replaceable rubber sleeve, lining pinch valve, is abrasion and corrosion resistant

 U_{SeS} : Valve controls flow of abrasive and corrosive solutions at pressures up to 50 psi and temperatures to 170°F.

Features: Double acting jaw closure allows unrestricted streamlined flow at full open position and assures free flow without clogging in any throttled position.

Description: Fluid handled is completely isolated by sleeve fabricated from a special form of natural rubber. Sleeve is easily replaceable and resists cor-



Rubber valve sleeve is easily replaceable

rosive and abrasive action. Linings made from synthetics are available for special service. Valve is manufactured in sizes 1½ through 6", cast iron or aluminum body for standard schedule 40 pipe flanged connections

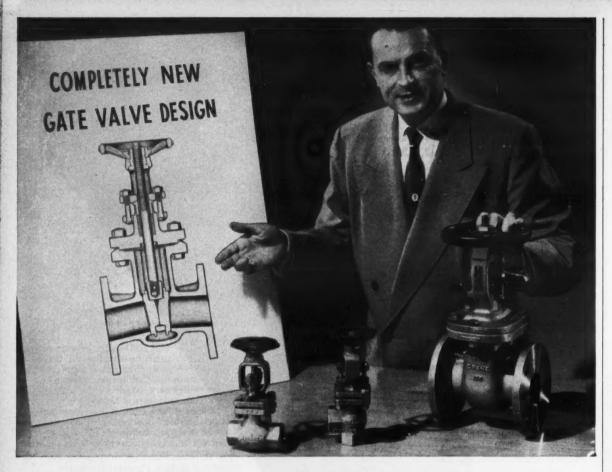
(Pinch valve is a product of Linatex Corp. of America, Dept. CP, Vernon Ave., Rockville, Conn. . . . or for more information check CP 1908 on form opposite last page.)

Estimating operating costs for demineralizing water?? . . . see nomograph pages 228 and 230



When inquiring check CP 1909 opposite last page

VG



New CRANE Corrosion-resistant valves in 18-8 SMo and Craneloy 20

Gate, Globe, Angle and Check Patterns

Few valves for process industries have ever received the quality treatment given this new Crane line—at prices you'll find O.K.

Note, for instance, the unique yet simple split-wedge disc construction in the gate valves. Those dual identical discs are free to rotate in their holder—the most effective design for resisting galling. The trunnion shape at the back of each disc assures even distribution of closing forces. You couldn't buckle them if you tried.

The globe and angle valves give equally outstanding control of corrosive fluids. A new type disc-stem connection, with minimum clearances, practically eliminates vibration. By placing seating load closer to seats, it provides easier, more accurate closure.

Check valves feature compact, thoroughly proved, non-slamming design.

Throughout, these valves are built for better service in your choice of Crane 18-8 SMo Stainless Steel or Craneloy 20. Both lines come with screwed or flanged ends.

ASK FOR THIS CATALOG—Full information including service suggestions given in circular AD-2080—available from your Crane Representative or by mail. Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers everywhere.



New split-wedge disc in gate valves combines the benefits of free rotation with uniform seat load pressure.



CRANE CO.

VALVES . FITTINGS . PIPE KITCHENS . PLUMBING . HEATING

CRANE'S FIRST CENTURY...1855-1955

When inquiring check CP 1910 opposite last page

Bead inside stainless tubing eliminated by patented welding process

Improvement in corrosion resistance and other properties increases potential use Th

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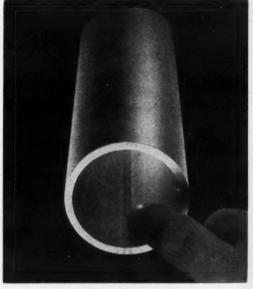
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Uses: Five distinct services: where corrosion resistance, heat resistance, cold resistance, and high pressure are required, and in architectural or mechanical applications. It is being used in the following industries: AEC, petroleum, pulp and paper, textile, refrigeration and air conditioning, chemical, aviation, and food.

Features: Method of welding the tubing and pipe does not leave a bead on the inside. The tubing and pipe have better physical properties,



Weld is smooth-both inside and out

appearance, and corrosion resistance. Weld has the same composition as the parent metal and is free from inclusions, oxides, or similar defects. Even after cold working or drawing, grooves, valleys, or undercuts are not produced in the weld.

The OD weld bead can be held uniform and smooth so a surface finish can be obtained similar to the surface of original parent metal, thereby making it possible to reduce the weld bead by swaging and improve the mechanical properties without undesirable side effects. Much better fabrication properties in production of tube assemblies,

heat exchangers, condensers, and boilers are noted.

The extremely smooth inside offers a better surface for the rolling in of tubes in tube sheets. Many of the high alloys or super alloys can now be rolled into tube sheets, while previously they had to be welded in. Corrosion resistance has been improved as there are no valleys or grooves, eliminating possible failure due to pit-type corrosion.

Description: The Trentweld® method of forming stainless and high alloy tubing and pipe is covered by US Patent No. 2,716,692. It utilizes the inert-gas shielded-arc process, an adaptation of the procedure developed by Hobart and Devers of GE in 1930. Heat is generated by an arc struck between a non-consummable tungsten electrode and the work. This arc is shielded in an atmosphere of inert gas, such as helium or argon, while the arc length is automatically maintained.

No additional metal is required in this welding process; the weld is a complete fusion of the butted edges of the strip. Secret is that the formed tubing is rolled and welded from the underside. Finished tubing and pipe is available in various Hastelloy grades, zirconium, Zircoloy, titanium, and 19-9-DL.

(Trentweld formed pipe and tube is a product of Trent Tube Company, Subsidiary of Crucible Steel Company of America, Dept. CP, East Troy, Wis. . . . or check CP 1911 opposite last page.)

Liquid ammonia handled by turbine pump

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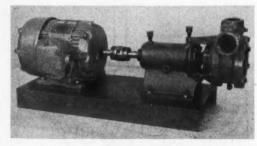
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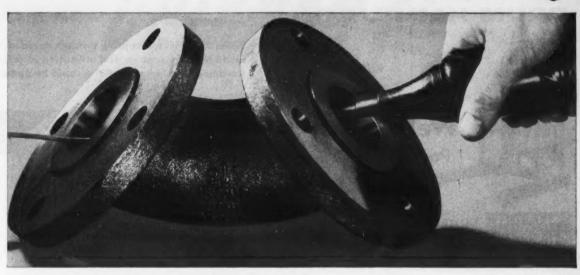
Liquid ammonia, liquefied petroleum gases, and various chemicals can be handled by turbine pump designed for cold process applications. Pump packing box has been eliminated in design and is replaced by a mechanical seal which is subject to suction pressure only.



Pump does not have a packing box, but uses a mechanical seal which is under suction pressure

Pump end is separable from frame assembly, thus facilitating use of special alloys for all parts in contact with the liquid being pumped.

(Type Z4 turbine pump is product of Aurora Pump Division, The New York Air Brake Co., Dept. CP, 625 N. Loucks St., Aurora, Ill. . . . or check CP 1912 on form opposite last page.)



You can see why

SARAN LINED PIPE

KEEPS SHUTDOWNS TO A MINIMUM

It's made of corrosion-resistant saran pipe swaged into strong, rigid, nonbursting steel. And every piece is spark tested before you buy!

Unscheduled shutdowns are a thing of the past when you use saran lined pipe, fittings and valves to convey corrosive liquids. This modern, trouble-free piping is corrosion resistant . . . forms tight, snug, leakproof joints . . . won't burst under working pressures up to 150 psi. And every single piece of saran lined pipe is carefully spark tested by hand to be sure that there are no pinpoint holidays or cracks in its lining. Cast steel lined fittings are available for higher pressures.

Installation costs are surprisingly low with saran lined pipes, fittings and valves, too. They can be cut and threaded in the field with standard pipe-fitter's tools. Their rigidity means few supporting members are needed.

If you want to convey acids, alkalies, or other corrosive liquids at low over-all cost, be sure to investigate saran lined pipe. Contact the Saran Lined Pipe Company, 2415 Burdette Avenue, Ferndale 20, Michigan, Department SP528B-2.

RELATED SARAN PRODUCTS

Tank lining • Saran rubber molding stock • Saran tubing and fittings • Saran pipe and fittings.

SOME OF THE MANY INSTALLATIONS USING

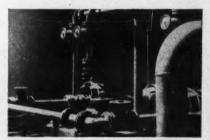
SARAN LINED

STEEL PIPE

Saran Lined Pipe is Manufactured by The Dow Chemical Company Midland, Michigan



A large Southeastern paper mill uses saran lined pipe to handle corrosive alum solution. It has proved to be an exceptionally satisfactory answer to eliminating unscheduled shutdowns.



This installation of a large Midwest company has conveyed highly corrosive hydrochloric acid for over seven years. The joints have remained as tight and leakproof as new.

you can depend on DOW PLASTICS



When inquiring check CP 1913 opposite last page

Simplify, Speed Up DRUM HANDLING



with

Weld-Bilt

Portable Drum

Elevator

"Weld Bilt"

You can lift, transport, store and DUMP all sizes of drums faster, easier, with this new WELD-

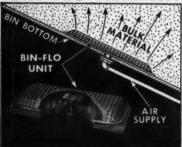
BILT Portable Drum Elevator. Unique worm-gear tilting mechanism makes "last-drop" dumping safer, more efficient, with minimum effort. Lift, electric-hydraulic operated, is also available for hand operation or fully electrified. Jack-up type steering permits easy, safe positioning.

Write for prices on this important time and labor-saver. WEST BEND EQUIPMENT CORP.
MATERIALS HANDLING ENGINEERS

322 Water Street, West Bend, Wisconsin

When inquiring check CP 1914 opposite last page

BIN-FLO AERATING UNIT



Provides Steady
Flow of Dry,
Finely Ground
Materials which
tend to bridge in
storage. Uses
only small
amount
low-pressure
air.

BIN-DICATOR BIN LEVEL

For All Bulk Materials

signals change in level; automatically starts and stops filling and emptying equipment.



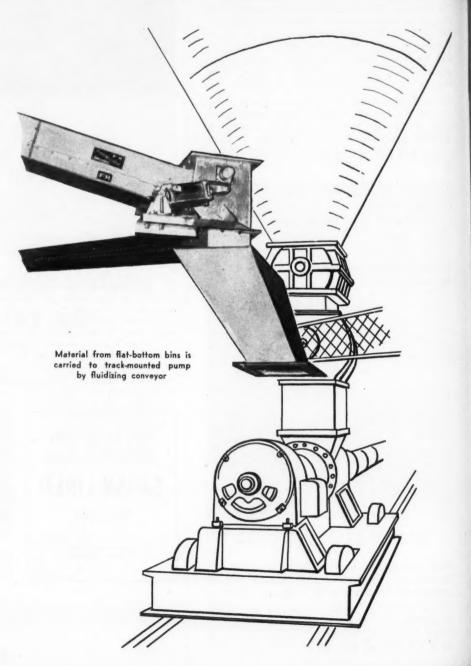
THE BIN-DICATOR CO.

NEW DETAIL DATA BOOK FREE

When inquiring check CP 1915 opposite last page

When faced with mounting product demand, Gouverneur Talc Co. found that, through careful utilization of original equipment, storage and shipping facilities could be geared for . . .

increased output with



minimum outlay

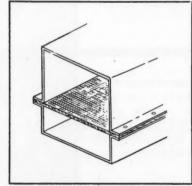
Here's how Gouverneur solved its handling problem by feeding materials from new storage facilities into its existing pneumatic conveying system

PROBLEM: When operations began in 1948, Gouverneur Talc Company of Gouverneur, N. Y. had a plant capacity of 200 tons per day. But, to keep pace with an increased demand by manufacturers of paints, ceramics, rubber and paper, need was felt to expand the handling system for finished talc.

Gouverneur's product talc is pneumatically conveyed from grinding mills to storage where it is held until needed for shipment. Then it is pneumatically conveyed to bagging or bulk loading equipment. Original installation, now an integral part of the expanded system, included four 400-ton concrete storage silos and four Fuller-Kinyon pumps — three stationary and one portable.

Stationary units convey talc from final processing stage into silos. Mounted on tracks, portable unit takes discharge from cone-bottom silos and moves finished material to bagging machines or boxcar loading. Talc is delivered to portable pump by variable speed feeders that regulate flow to conform with packing rate.

As production of tale is essentially a straight line (Continued on next page)

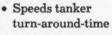


Section through fluidizing conveyor



MARINE LOADING ARM

The first basic improvement for loading and unloading of petroleum products in over 30 years.



- Far less manpower to operate
- Long life, trouble free operation
- · Elimination of hose bursts
- Lowers fire and work compensation premiums
- Operates from -60° F. to $+225^{\circ}$ F.
- One motor, one switch controls operation
- Static and spark resistant
- · No manhandling of hose



CHIKSAN

A SUBSIDIARY OF FOOD MACHINERY AND CHEMICAL CORPORATIO



CHIKSAN COMPANY; Brea, California

Please send me more information on the Chiksan
Marine Loading Arm.

Name

Company

Address

City

Zone
State

131



CHIKSAN COMPANY - BREA, CALIFORNIA . CHICAGO 3, ILLINOIS . NEWARK 2, NEW JERSEY

Well Equipment Mfg. Corp. (Division), Houston 1, Texas - Subsidiaries: Chiksan Export Co., Brea, Calif., Newark 2, N. J. - Chiksan of Canada, Ltd., Edmonton, Alta.

When inquiring check CP 1916 opposite last page

FLUIDIZING CONVEYORS

(Continued from preceding page)

proposition, a shortage of storage facilities — Gouverneur's greatest problem — would have caused shipping variances to be felt throughout whole processing chain.

Solution: Gouverneur's first move toward expanding storage and shipping capacity was installation of five flat-bottom bins next to the original silos. By branch lines and valves, these new bins could be filled by the existing pumping system. As the new bins were not directly over the portable pump, fluidized pneumatic conveyors move talc from bins to existing pump for movement to packing.

Talc is gravity-fed into pump's hopper, thence by a screw into an air chamber where material is fluidized for dispatching through pneumatic system.

Each bin-to-pump conveyor consists of an inclined rectangular duct separated into two longitudinal sections by a porous membrane. Tale is fed into the upper section and low pressure air enters the lower half. Air penetrating this membrane fluidizes tale which flows by gravity to the trackmounted pump. Each is equipped with a cutoff valve, operated by an air motor, actuated by a level indicator in the receiving bin.

First stage of expansion was completed by addition of a second packing station. This station was also serviced by the existing handling equipment.

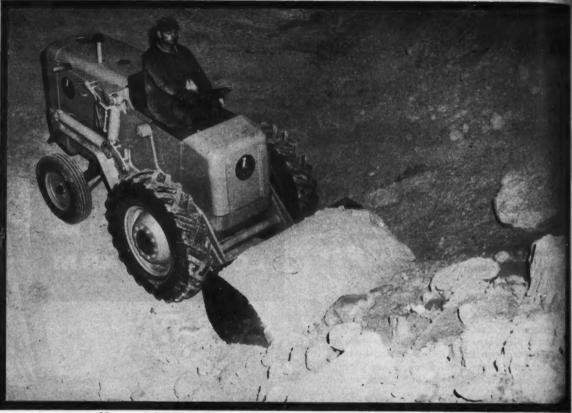
More recently, Gouverneur began the second phase of its expansion. It added 1) grinding facilities, 2) a third packing station and 3) a new silo located about 200 feet from the original cluster. At the same time, four new pumps were installed.

First of these was a new portable unit that runs on the same track as the original pump. Separate conveyor lines are being installed to handle talc of different grades. Normally, each pump will be assigned to handling material within a certain range of fineness. System is flexible, however, and each pump can discharge into either line.

A second pump is mounted beneath the new silo and delivers material to second packing station. Third pump sends tale from new grinding mill to one of the new bins and to the new silo. Fourth unit is used for emptying one of the bins. It can direct material either to two of the original silos or to the new silo.

Result: Gouverneur has been able to increase its storage capacity 22% and its shipping capacity 60%. Its handling system was expanded with little or no alteration to the original equipment. Finished system has proven highly dependable, requiring little maintenance. Pumps, for example, are dismantled only once a year to replace worn parts.

Moreover, system is flexible, not only in operation but in its adaptibility to further expansion. In



New model HAH — digs and carries up to 1 cu. yd. or 3,000 lbs. at a time.

BOTH NEW and

DIGGING POWER

3,000 lbs. and 4,500 lbs. of tractive thrust, plus powerful upward rotation of bucket by twin hydraulic rams, develop tremendous digging power.



40° tip-back also brings loaded bucket back close to machine and low for safe, fast transport.



40° BUCKET TIP-BACK

Bucket tips back 40° on its hinges before it is even lifted — to get heaped bucket-loads quickly and prevent loss due to spillage.



SAFETY-STABILITY

Bucket arms and other moving parts are mounted and positioned low where they are no hazard to operator's limbs.





New model HA — digs and carries up to 18 cu. ft. or 2,000 lbs. at a time.

More Productive

Hough, the pioneer and leader in the tractorshovel industry, is pleased to present these all-new "PAYLOADER" units. Both have front-wheel-drive and rear-wheel-steer — especially designed for stockpile work and fast material moving in close quarters. They give you a choice of sizes to best fit your requirements — they're the finest of their type in Hough history — they're both way ahead of the field in design, performance and allround value.

Your Hough Distributor is eager to show what these new machines can do for you. The Frank G. Hough Co., 744 Sunnyside Ave., Libertyville, Ill.

OTHER FEATURES of these outstanding new models include: torque converter drive; full-reversing transmissions; closed, pressure-controlled hydraulic system; large hydraulic brakes; accumulator in hydraulic system that prevents pressure shocks and facilitates bucket control.





	Send of Model														8	iz	ze.	s	
ı	Name	 . ,																	
	Title.	 																	
	Firm.	 																	
	Street	 																	
	City.						S	ta	te	9.									

THE FRANK G. HOUGH CO.

When inquiring check CP 1917 opposite last page

operation, material can be dispatched from any grinding mill to various silos and bins, and thence to any bagging or bulk loading station — merely by positioning valves. Thus, routing may be altered as the need arises and flow checked visually by lights on a control board.

(Fluidizing pumps and Air-slide conveyors are products of The Fuller Co., Div. of General American Transportation Corp., Dept. CP, Catasauqua, Pa. . . . or check CP 1918 opposite last page.)

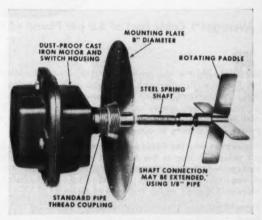
Measures level on any type bin is not affected by pressure or vacuum . . .

shaft does not distort under load, will not top-load

Uses: As level indicator in bins under pressure or vacuum. Also indicates level of bins, chutes or conveyors handling materials containing large lumps which would tend to bridge over diaphragm level indicators or "rat hole" and prevent diaphragm's operation.

Features: Installation requires only hole in bin wall to admit paddle, attachment of steel plate with six screws and connection to a power source.

Description: Unit has slowly rotating paddle mounted on flexible shaft. This projects into bin,



Paddle mounts on flexible shaft

driven by small motor mounted in housing outside bin. Unit is provided with special fitting so that shaft can be extended to any desired length by inserting piece of ½" pipe.

When material in bin covers paddle, rotation is stopped and motor torque actuates micro-switch in housing. Shaft flexes under impact or thrust.

(Paddle-type bin level indicator is manufactured by Bin-Dicator Co., Dept. CP, 13946-43 Kercheval Ave., Detroit 15, Mich. . . . or for more information check CP 1919 opposite last page.)



Averages 1 Cubic Foot of Air per Pound of Materials Handled

right here is one reason — and a stand-out reason — why the Robinson Air-Activated Conveyor is so economical in handling bulk dry-pulverized and fine-granular materials. Compressed air costs money so, if you can hold air costs down, as with the Robinson, you keep handling costs down. And no other power is necessary to operate a Robinson System.

The reason why the Robinson System can operate with such low air volume is due to the fluidized nature of the charge when transported through the pipes. Pressure alone will not suffice. It requires this Robinson Air-Activation or fluidizing effect. Material "flows" rather than blasts through.

Many Robinson Systems are in service handling a variety of products and in some cases are transporting them several thousand feet. This system may be just what you need for handling those dry, bulk materials in your plant. It has several outstanding features which we'll be glad to discuss at your convenience.



A Division of Morse Boulger Destructor Co.

CONVEYOR SYSTEMS

80-T FIFTH AVENUE . NEW YORK 11, N. Y.

Representatives in Principal Cities

When inquiring check CP 1920 opposite last page

MATERIAL HANDLING

Single unit useful as skid or truck; available with three types of wheels

In warehousing or storage operations where palletizing and use of pallet trucks is not practical or possible.

Features: Single lift jack can be used in combination with any number of skid trucks.

Description: Truck is available in wide range of platform sizes



Single lift jack can be used with any number of semi-live platforms

and with three kinds of wheels. all-metal, rubber-tired, or plastic. (Roll-N-Stor Lift Truck System is product of The Hamilton Caster & Mfg. Co., Dept. CP, 1700 Dixie Highway, Hamilton, Ohio. Check CP 1921 opposite last page.)

Material handling case studies presented

Booklet contains 25 different case studies which describe in detail interesting applications of material handling.

Among industries covered are motor freight, chemical warehousing, food processing, paper, bottling, furniture, paint, and rubber. The folder contains solutions to all kinds of material handling problems, suggests ways to cut handling costs, and gain additional storage space.

"Case Studies" is available from Lewis-Shepard Products, Inc., Dept. CP, 193 Walnut St., Watertown, Miss. Specify CP 1922 opposite last page.

Lower Loading Dock Costs with **PENCO** Light Weight Magnesium Car Loading and Truck Ramps

MODERN SIMPLIFIED DESIGN

Scientifically Engineered

ALL WELDED STURDY CONSTRUCTION

Built like a bridge, heavy Side & Center Trusses

- * One Man Operation
- * Safety Side Rails
- * Safety Curb Ends
- * Saves Tires & Equipment
- * Safety tread: non-skidding
- * Full range locking device
- * Full length hand grips

* Saves man power; reduces accidents; speeds-up

all dock operations



700

mov

by (

Made from Light Weight Magnesium thousands of Penco Ramps are in use throughout America. There is a Penco style and size (any capacity) for either car-loading or truck-loading docks, ready for instant use without installation expense. Send for descriptive literatureget all the facts on the many exclusive and superior features available only in Penco Ramps. Also Steel Ramps.

COAST TO COAST DISTRIBUTORS

PENCO ENGINEERING CO. 25 California Street, San Francisco 11

When inquiring check CP 1923 opposite last page

Lumenite Electronic LIQUID LEVEL CONTROLS

With no floats—no moving parts in the container (except non-conductive liquids) these Lumenite Electronic Liquid Level Controls maintain exact levels of water, milk, syrups, etc., in tanks, reservoirs, boilers, processors, freezers-either open or under high pressure.

Clean—Sanitary

Simple to Install

Require no Servicing

Bulletin FLM-on Liquid Level Controls Bulletin ITC-on Ice Thickness Controls Bulletin FN-on Non-Conductive Liquids

Lumenite Automatic TIMING CONTROLS



Lumenite Timers are the simplest, sturdiest and longest life. Accurate to fractions of a second. they speed and make more accurate all types of timed production. For Details ask for

Bulletin LT—Standard Time Switches Bulletin CR—Cycle Repeating
Bulletin PC—Program Clocks
Bulletin R—Time Delay Relays
Bulletin RMC—Auto. Reset Timers

Bulletin ET-Electronic Timers Electronic or Electric Controls

and Timers designed for special service.

Lumenite Electronic Company 407 S. Dearborn St., Chicago 5, Illinois

When inquiring check CP 1924 opposite last page

CHEMICAL PROCESSING

NO

700-lb drums easily handled, moved through plant by one man

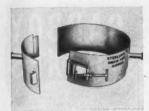


Fig. I



E:- 2



Fig 3

Portable, self-centering drum lift has been developed for one-man handling of heavy drums.

Feature of the lift is a "girdle" (Fig 1), by means of which drum is grasped and lifted from vertical or horizontal position. This "girdle" can be positioned by one man in a matter of seconds.

Drum can be raised, then locked in horizontal position for pouring by means of a brake located on lift arm. Figure 2 shows drum in position for horizontal lifting.

Single workman can raise for stacking two high if desired, as shown in Figure 3. By releasing brake on lift arms, drum can be rotated for mixing of contents. Ballbearing casters provide easy transport-

ing of loaded drum throughout plant. Positive footoperated brake holds drum lift on slope or incline.

(Drum lift is a product of Sterling, Fleischman Co., Dept. CP, Broomall, Pa. . . . or for more information reader may simply check CP 1925 on form which is located opposite last page.)

For plant-scale storage of distilled water

Illustrated bulletin discusses features of tanks for storage of distilled water. It explains that these are available in seven sizes in aluminum or tinned copper.

Bul 915 is issued by Precision Scientific Co., Dept. CP, 3737 W. Cortland St., Chicago 47, Ill. When inquiring reader may simply check CP 1926 on Reader Service slip which is located opposite last page.



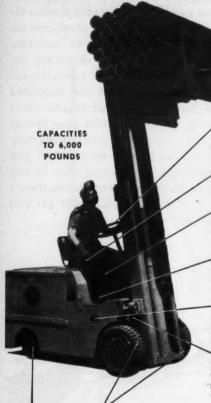
A NATIONWIDE ORGANIZATION WITH BRANCH OFFICES IN IMPORTANT MARKET CENTERS

231 South La Salle Street, Chicago 4, Illinois

Dallas • Fond du Lac • St. Paul • St. Louis • Tulsa • San Francisco • New York

When inquiring check CP 1927 opposite last page

BAKER announces a NEW LINE of BATTERYPOWERED FORK TRUCKS



with many added features

• EASIER TO STEER—Less weight on steering axle, combined with automotive type steer, provides finger-tip control.

• MORE CONVENIENT CONTROLS Located right where operator wants them. Easy to actuate.

FULL VISIBILITY - No cowl, no console - no "neck craning". Greater safety, less operator fatigue, more work.

 EASIER TO GET ON OR OFF Absence of cowl and other obstructions means faster mounting and dismounting.

- DYNAMIC BRAKING — Greater safety on ramps, smoother stops, less wear on brake lining, greater protection for truck and load.

SEPARATE PARKING BRAKE Linked to driver's seat – holds truck when driver dismounts. On armature shaft – independent of wheel brakes.

HYDRAULIC WHEEL BRAKES—Finest available. Self-energizing, self-equalizing. Single point adjustment.

• STRONGER STEERING AXLE—Double-yoke construction and rubber mounting reduces road shocks and means smoother riding.

Every truck in the new Baker "FT" line has a full one year warranty—proof of our confidence in our workmanship and quality. Elements that have built the outstanding reputation for previous Baker electric trucks have been retained, and new features added.

Reliable Timken axle is specially designed for industrial truck use. Less overhang, lighter weight, greater stability, shorter turning radius, more forward tilt and lower silhouette are advantages gained in this new design.

Write for complete information.

Baker

THE BAKER-RAULANG COMPANY
1208 West 80th Street · Cleveland 2, Ohio

handling equipment

A Subsidiary of Otis Elevator Company

When inquiring check CP 1928 opposite last page

MATERIAL HANDLING

Makes rotation of paper a quick, easy job

Uses: For inverting skid loads of paper.

Features: Unit has four-point suspension with load-carrying frame supported on its four corners by stabilizing casters and rear load wheels. Weight of truck and load is distributed over five wheels for floor protection.

Description: Stacking fork truck with rotating clamp has two clamping arms independently operated by hydraulic cylinders; one above the load and the other beneath the load.

Truck has capacity of 3000 lb @ load length of 56" and clamping arms 42" long x 26" wide. Lifting height is 84" enabling unit to double deck skid loads of paper in the storage area when it is not being used for rotating. Clamping arms can handle loads from 32" to 60" in height (including the underneath skid).

(JackStacker is a product of Lewis-Shepard Products, Inc., Dept. CP, 193 Walnut St., Watertown, Mass. . . . or for more information reader may simply check CP 1929 on Reader Service slip which is located opposite last page.)

Single telescoping mast increases speed of fork truck

Single upright mast replaces double mast in line of fork trucks recently developed. Manufacturer states that design allows a 15% increase in hoist speed. Load-raising speed of unit is 58 ft/min.

All standard hydraulic attachments can be mounted on single-mast unit. Mast itself can be field-attached on many fork truck models without alterations. Lift heights to 12' are now available.

(Monomast lift truck is a product of the Hyster Co., Dept. CP, P.O. Box 4318, Portland 8, Oregon . . . or for more information reader may simply check CP 1930 on the Reader Service slip which is located opposite last page.)



Fe

D

Treen manufactured 5-6½- and 13 gallon carboy boxes are quality built in accordance with ICC regulations, with features that give all-point protection; reducing hazards and breakage, ease in handling and compact loading.

WRITE FOR COMPLETE DATA

TREEN BOX COMPANY TIOGA AND MEMPHIS STS., PHILADELPHIA 34

"Aces in Cases" for over 50 years

When inquiring check CP 1931 opposite last page



Catalog also covers induction Relays, Relay Enclosures, Contactors and Starters, Multiple Pump Controls, Electrode Holders, Starter and Relay Combinations, Special Controls and Panels.

B/W CONTROLLER CORPORATION

2204 E. Maple Road Birmingham, Mich.

2

NO

When inquiring check CP 1932 opposite last page

IN THE FLOATLESS

CONTROL FIELD

Elevates trucks to loading level without manual control . . .

platform stopped at level of loading floor by automatic leveling ramp

Uses: Elevating fork trucks and similar material handling devices to floor level of cargo carrier without use of manual controls.

Features: Platform is actuated by truck passing over switch bar. Unit is stopped at level of truck floor by automatic leveling ramp.

Description: Two post hydraulic lift has 30" stroke, 60" when installed at ground level. Ground



Two post hoist levels at loading floor automatically

level installations may be equipped with safety barrier to prevent vehicle's run-off.

(Hoist is product of Field Engineering Co., Dept. CP, 66 Foote Ave., Jamestown, N. Y. . . . or for more information check CP 1933 on form opposite last page.)

One man lifts 150 lb — with one hand . . .

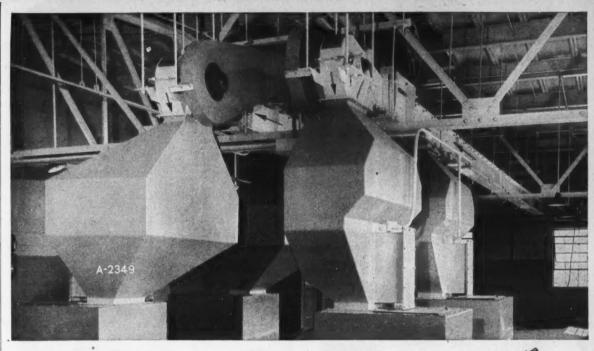
"free wheeling" hoist pulldown makes operation effortless

Uses: Allows one man to handle loads up to 150 lb safely and easily.

Features: Gears disengage when hoist is unloaded, making pulldown effortless. Load on hook engages gears for lifting.

Description: Pneumatic unit cannot overheat or burn out from overload or all-day operation. Loads are raised or lowered at any speed up to 40 fpm. Unit is controlled with one hand, is portable, weighs 14 lb.

(Size 86A-1 air hoist is product of Keller Tool Co., Dept. CP, 1305 Fulton St., Grand Haven, Mich. . . . or for more information check CP 1934 on form which is located opposite last page.)



Sealed Conveying Pays Off Here

Push-Button S-A REDLER SYSTEM Moves Chemicals In Dust-Free, Moisture-Protected Flow

"Move alum and lime for water treatment to an overhead storage system — do it economically without dusting — and protect the easily hydrated materials from moisture." This handling problem at the Radford Arsenal, Radford, Virginia, was completely solved with the installation of an S-A Redler Conveyor-Elevator system.

Casings of these compact conveyors are completely sealed — even the connections between units are gasketed. Dust can't get out — moisture can't get in.

REDLERS bring other important advantages vital to automatic handling. They are self-feeding, will not jam when choke-fed and are exceptionally compact. They are self-cleaning, insuring product purity on every run. Power requirements are low and REDLERS, because of their minimum weight, cut support requirements. All this adds up to push-button conveying at low cost per ton for Radford Arsenal.

If you have the problem of moving anything from coal to cornstarch—without dust or product contamination—REDLERS are an economical answer. For full details, write for Catalog No. 140.

AT RADFORD ARSENAL, REDLER system is push-button controlled. Pressing a single button opens motor-operated gates under feed hoppers and starts REDLER Conveyor-Elevators. Chemicals are carried 50-ft. vertically and 50-ft. horizontally to surge bins. Lime moves at 2-tons per hour, alum at 3-tons per hour. S-A Tellevel control closes feed gates when bins are full. Conveyors run until thoroughly cleaned out. Then button re-sets.



FEED

Cross-section through standard REDLER unit. Skeleton flights attached to chain links move material in a solid column, minimizing dust formation and degradation.

STEPHENS-ADAMSON MFG. CO.

11 Ridgeway Avenue, Aurora, Illinois • Los Angeles, Calif. • Belleville, Ontario

Engineering Division

Specialists in the design and manufacture of all types of bulk materials conveying systems

Standard Products Division

A complete line of conveyor accessories including centrifugal loaders — car pullers — bin level controls — etc.

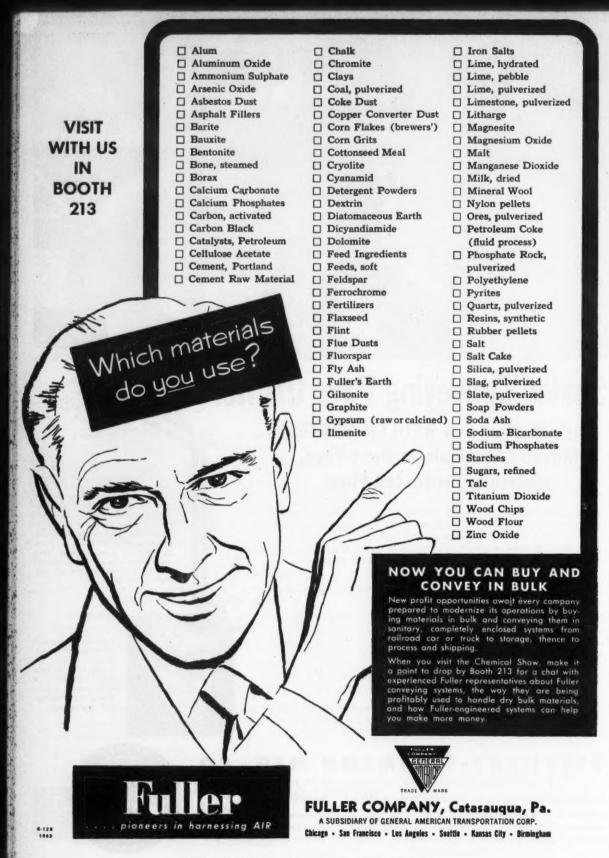
Sealmaster Division

A complete line of industrial ball bearing units available in both standard and special housings.



When inquiring check CP 1935 opposite last page

G



Mechanical vibration used in lightweight conveyor

Eccentric drive is totally enclosed, splash lubricated

Uses: Conveying solid materials such as lump alum, bauxite, crushed dolomite, gypsum, coarse salt, etc.

Features: Powered by electric motor, rather than magnetic unit, conveyor is light in weight, simple, and has low first cost.

Description: Unit is built in 12' sections. Sections may be cut to any odd length. Deck widths of 5, 8, 12, 18 and 24' are available. Height from



Conveyor drive is totally enclosed, immersed in oil

floor is 14". Unit will move materials of good conveyability up to 45 tph. Conveyor is simple to install and quiet in operation.

Sections are connected by means of flanges, welded to each section end. Gasket between flanges insures tight joint. Decks are formed of continuous strip of metal, preventing materials being caught in sharp corners or weld marks. Special construction materials such as stainless, aluminum or Monel are available on order.

(LMV vibrating conveyor is product of Jeffrey Mfg. Co., Dept. CP, 956 N. 4th St., Columbus 16, Ohio or for more information check CP 1937 on the convenient Reader Service slip which is located opposite last page.)

Patches rubber conveyor belts without heat, curing time

self-vulcanizing material permits belt repair without removal

Uses: For repairing edge wear and damaged spots on rubber conveyor belts and for covering of metal belt fasteners.

Features: No heat or vulcanizing equipment is required. Repaired belts may be returned to service immediately.

Description: Area to be repaired is cleaned and coated with vulcanizing fluid. Patch material

NO



When inquiring check CP 1938 opposite last page

Damaged belts may be repaired without removal and immediately returned to service

is applied and treated with vulcanizing powder. Powder accelerates curing of material.

(Rema is distributed by Flexible Steel Lacing Co., Dept. CP, 4607 Lexington St., Chicago 44, Ill. . . . or check CP 1939 on form opposite last page.)



"I told ya — turn off the feed — we're outa bags and the spout won't close!!!"



CHECK THE BOX AT THE BOTTOM



CORRUGATED AND SOLID FIBRE BOXES
FOLDING CARTONS • KRAFT PAPER AND SPECIALTIES
KRAFT BAGS AND SACKS

... to see how Gaylord Boxes save you money in warehousing. They make possible taller stacking to better utilize your valuable storage space. The superior materials and precision construction of Gaylord Boxes help prevent "stackbottom bulge."

For proof of how Gaylord Boxes can protect your profit, as well as your product, call your nearby Gaylord office.

GAYLORD CONTAINER CORPORATION • ST. LOUIS

SALES OFFICES FROM COAST TO COAST * CONSULT YOUR LOCAL PHONE BOOK

When inquiring check CP 1940 opposite last page



Towmotor Fork Lift Trucks conserve floor space by stacking materials right to the ceiling, give industry . . .

SAVINGS by the bagful!

Caught in the "squeeze" between rising costs and lower profits? Towmotor Mass Handling can help you cut production costs at once—by eliminating wasted man power, overtime and inefficiency—put your company in a more favorable position both cost-wise and sales-wise. Find out how EXTRA PROFITS can be yours by writing today for a Certified Job Study covering materials handling savings made in your specific industry. Address: Towmotor Corporation, Div. 2311, 1226 East 152nd Street, Cleveland 10, Ohio.



FORK LIFT TRUCKS and TRACTORS Since 1919

IT'S HARD TO COMPETE WITH A TOWMOTOR EQUIPPED PLANT!

When inquiring check CP 1941 opposite last page

MATERIAL HANDLING

Grasps drums without power; attaches to present trucks

Uses: Attaches to fork trucks for handling of drums, barrels.

Features: Operating on the gravity principle, unit requires no power, is controlled by operator.



Unit operates by gravity

Description: Unit, attaching to any lift truck, can break out tightly nested drums, and handle securely even badly dented or tilted drums. It holds safely over rough terrain, and tiers smoothly.



Arms hold drúms at rolling chimes or top rims

(Drum crab is product of Kughler Development Corp., Material Handling Specialties Div., Dept. CP, 230 Park Ave., New York, N. Y. Check CP 1942 opp. last page.)

Pictures two dozen unusual trucks

Printed in two colors, four-page catalog shows 23 hand trucks for special uses, and other accessories. Suggested applications are given.

Cat L-10-55 is issued by Leebaw Mfg. Co., Dept. CP, 65 Wayne Ave., Youngstown, Ohio. Check CP 1943 opposite last page.



Uses:

Featu clutch

> Max Desc

> elect

Eq

(M

chi

che

NOV

When inquiring check CP 1944 opposite last page



When inquiring check CP 1945 opposite last page

CHEMICAL PROCESSING

Maneuvers in confined areas with 1500-lb load . . .

torque converter reduces driver fatigue, promotes smoother operation

Uses: Handling bulk materials in boxcars, narrow aisles and similar confined areas.

Features: Torque converter eliminates engine clutch . . . reduces driver fatigue. Fifteen cu ft



Tractor shovel handles material at dumping heights up to 5 ft

bucket will handle 1500 lb at speed of 5.6 mph. Maximum dumping height is 5 ft.

Description: Unit is available with either 36-hp gasoline or 42-hp diesel engine, both with 12-volt electrical system. Overall dimensions are 5' 1"



Shovel carries 1500 lb at speed of 5.6 mph

high, 4' 2" wide at front hubs and 10' 8" long. Equipment weighs 6250 lb.

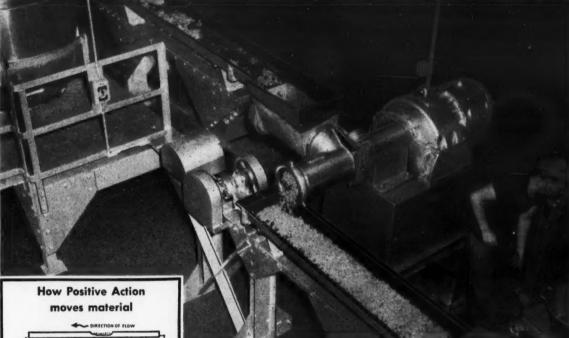
(Model 12-B is a product of Construction Machinery Division, Clark Equipment Company, Dept. CP, 528 Second St., Benton Harbor, Mich. . . . or check CP 1946 opposite last page.)

ARRANGE YOUR OWN

oscillating conveyor system from stock components



LINK-BELT FLEXMOUNT OSCILLATING CON-VEYORS are pre-engineered — can be bought from local stocks. Standard sections of 8, 12, 18-in. widths make selection easy . . assembly simple. Heavy-duty 36-in. wide units are also available from local stocks.





Positive-action, constant-stroke eccentric drive provides a powerful, yet gentle upward and forward oscillating motion. Large volumes of material are moved in a uniform, continuous flow, regardless of surges. Resonant spring action of resilient legs cuts power requirements to a minimum. Only maintenance is drive lubrication.

Asy to order . . . easy to install, economical Link-Belt FLEX-MOUNT conveyors are an established answer for a wide range of hard-to-handle materials. Whether pulverized, granular or lumpy . . . hot or cold, wet or dry, corrosive or abrasive—effective handling can be arranged with a minimum of engineering detail.

When your material moves on FLEXMOUNT . . . positive, jam-

proof action plus safe, compact, leak-proof design provide top efficiency and capacity. And if sanitation is among your requirements, you'll welcome the ease of cleaning these conveyors.

Typical of flexible arrangements possible with FLEXMOUNT is this conveyor combination carrying meat to and from a grinder. Stock sections can be built to any length desired . . . up to 100 ft. with a single motor. Dividers are available for simultaneous handling of two or more materials, and metal covers can be added for dust-tight enclosure.

See the versatile Flexmount at your nearby Link-Belt Factory Branch Store or Authorized Stock-Carrying Distributor, or write for Book 2478.

LINK-®-BELT

FLEXMOUNT OSCILLATING CONVEYORS

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

When inquiring check CP 1947 opposite last page

G

A DOUBLE BARRELLED TROUBLE SHOOTER

PANALARM "50 VS"

VISUAL SEQUENCE ANNUNCIATOR*

1

VISUALLY INDICATES
first "off-normal" and subsequent "off-normals".



2 SEQUENTIALLY GROUPS related variables for easy interpretation.

Troubleshooting in complex processes can be expensive and time consuming. The Panalarm "50VS" Visual Sequence Annunciator eliminates guesswork... pinpoints trouble. It immediately flashes the cause of trouble; instantly shows resultant "off-normals", and provides a means of grouping and acknowledging related variables so that minimum interpretation is required ... quick, direct corrective action can be immediately taken.

Your present Universal Panalarm
"50" Annunciator System can be changed
to provide visual sequence
signals. This flexibility prevents
obsolescence . . . has made
the Panalarm "50" the most
versatile audio-visual
annunciator available
today.

Send for Bulletin 6-A.

LISTED BY

UNDERWRITERS'

LABORATORIES

PANALARM "50VS" gives CONTROL INFORMATION

- The primary cause of trouble . . .
- Secondary "offnormals" resulting . . .
- Sequential follow-up of "off-normal"...

PANALARM

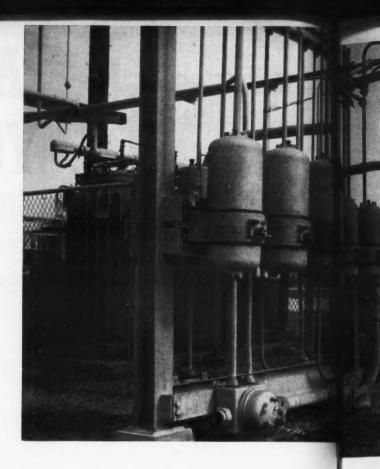
Alarm and Safety Division

PANELLIT, INC.

7409 N. Hamlin Avenue, Skokie, Illinois

*U.S. Patent No. 2701872 Copyright 1955, Panellit, Inc.

When inquiring check CP 1948 opposite last page



Explosion-proof electrical enclosures help large Southwestern refinery to . . .

handle explosive vapors safely

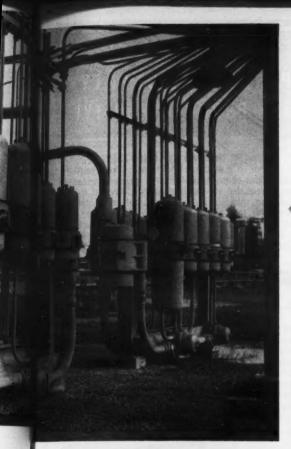
By THEODORE W. WETT, Assistant Editor

Explosion-proof electrical enclosures, installed throughout area in which lubricating oils and waxes are made, have helped a large Southwestern refinery handle hazardous vapors safely. Housings have functioned many times in preventing explosions in this area where propane, methyl ethyl ketone, toluene, naphtha, and other hydrocarbons are used at high temperatures above flash point.

Enclosures and conduit systems, most of which were placed in service in 1948, have resisted the corroding effect of the Gulf Coast climate and are in excellent condition. Breathers and drains having corrosion resistant construction with internal flame-tight but not airtight or watertight — labyrinths prevent internal water condensation in system.

Housings have sufficient strength and closefitting joints to withstand and confine repeated explosions without igniting the surrounding atmosphere. Enclosures are not gas tight but keep flame from reaching outside while allowing cooled gases to escape. Construction is of an alloy having characteristics of both cast steel and gray iron. Durable finish is provided by heavy zinc plating, covered by a coating of vinyl resin base aluminum lacquer.

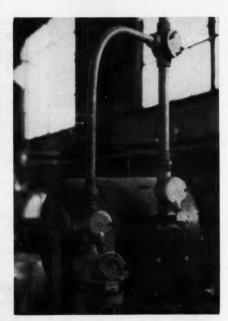
(Condulet explosion-proof electrical enclosures are a product of Crouse-Hinds Co., Dept. CP, Syracuse 1, N.Y. . . . or for more information check CP 1949 on form opposite last page.)



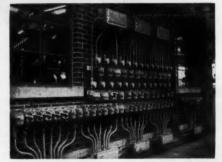
Explosion-proof motor control equipment, 440 volt, outdoors—with transformer substation in background



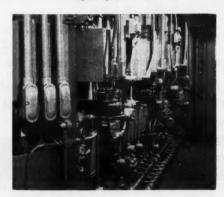
Explosion-proof area lighting panel. At top is ventilating breather



Remote emergency stop switches on 440 volt pump drive. This is good example of how a motor is hooked up for explosion-proof installation



Explosion-proof pushbutton station and conduit connections to pump motors used for transfer of liquid hydrocarbons



Rear of explosion-proof instrument panel





OPENING TYPE

to divert water to sprinkler deluge or water curtain systems, or to divert inflammable liquids to a point of safety.

Write for Bulletin E52C



CLOSING TYPE

to shut off the flow of inflammable liquids or to concentrate water or steam in fire mains.

Both types can be controlled thermostatically, electrically, or manually from any or many locations. Their design assures positive, dependable protection because they do not wedge and consequently cannot stick.

EVERLASTING
EVERLASTING VALVE CO.
73 PISK STREET, JERSEY CITY 5, N. J. Valves

When inquiring check CP 1950 opposite last page

Assure constant material flow from your bins and hoppers with . . .



PneuBin is a new concept in material flow engineering. The PneuBin unit consists of steel-backed, neoprene, pulsating panels, strategically located on the inside walls of your present bins.

Working off the plant's regular air supply, PneuBin is inflated and deflated in controlled cycles, causing the contents of the bin to be "positively displaced" and thus assures free flow of material through the discharge opening.

DEPENDABLE

PneuBin is on the job whatever the material flow problem. PneuBin's principle of "positive displacement" moves the bin contents, not the bin . . . assures constant, free-running material discharge. Depend on PneuBin to insure material flow.

M SAFE

No manpower is needed to facilitate material flow from bins when PneuBin is on the job. No more prodding, poling or sledge-hammering. Depend on PneuBin to insure material flow . . . safely.

E ECONOMICAL

PneuBin cuts maintenance costs, saves money year after year. Reduce bin damage . . . increase bin life. Depend on PneuBin to insure material flow . . . safely, economically.

QUIET

PneuBin pulsating panels breathe . . . not snore. No hammering or loud vibration noises. PneuBin's quiet operation adds to overall plant efficiency . . . reduces employee fatigue. Depend on PneuBin to insure material flow . . . safely, economically, quietly.

Send for "Flow Stoppage" and free literature. PneuBin engineers will gladly make recommendations with no obligation on your part.



A PRODUCT OF

GEROTOR MAY CORPORATION

1527 Maryland Ave., Baltimore 3, Maryland

When inquiring check CP 1951 opposite last page

SAFETY

Changes color to warn of leaking chemicals . . .

allows discovery of leaks while there are still weeps

Valve and flange covers incorporate color-changing agent that



gives warning when struck by leaking chemicals. Color change in cover is immediately apparent to anyone in vicinity and allows discovery of leaks while they are still weeps. Cover is unaffected by fumes.

Another safety feature of the cover is that it prevents sudden pipe line leaks from spraying harmful liquids onto nearby workers and equipment by deflecting chemical to the ground.

(Spray-Stop Covers are product of Neirad Industries, Inc., Dept. CP, P. O. Box 865, One Post Road, Darien, Conn. . . . or for more information reader may check CP 1952 on the Reader Service slip which is located opposite last page.)

Describes burn kit

Illustrated two-page bulletin describes burn kit developed for immediate treatment of all types of burns.

Kit consists of four 10-oz Foille aerosol sprays and Type D first aid dressings and accessories.

Bul 0402-3 is issued by Mine Safety Appliances Company, Dept. CP, 201 North Braddock Ave., Pittsburgh 8, Pa. When inquiring specify CP 1953 on form which is located opposite last page.

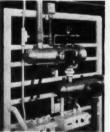
PERSONNEL SAFETY and PRODUCT PURITY!

HANOVIA EXPLOSION-PROOF GER-MICIDAL LAMP UNIT. Where concentrations of explosive fumes or ignitable gases have precluded air sterilization by ultraviolet irradiation, this Hanovia explosion-proof germicidal lamp unit may safely be used to eliminate airborne contamination and insure safety of product and personnel. Particularly valuable for use in transfer hoods.



HANOVIA LETHERAY. For non-hazardous areas, airborne bacteria, viruses, fungi, and mold spores are effectively destroyed with Hanovia Letheray ultraviolet fixtures. For intense irradiation at focal points, unit mounts directly over tables and benches, in fume hoods, and sterilizing cabinets, over conveyors, hoppers, and packaging machinery. May also be mounted on ceilings or walls.





HANOVIA STERITRON. Most efficient and dependable method of sterilizing de-ionized water and water for beverage and other industries. As water passes through the Steritron, powerful ultraviolet rays effectively destroy all bacteria and other contaminating organisms — even those that escape finest filters.

YOURS ON REQUEST: Interesting, informative brochures detailing benefits of these Hanovia ultraviolet products. Without obligation, write for your copies today. Dept.

50th Anniversary HANOVIA

World leader in ultraviolet for half a century.

HANDUIR CHEMICAL & MANUFACTURING COMPANY An Engelhard Industry 100 CHESTNUT STREET, NEWARK 5, N. J.

When inquiring check CP 1954 opposite last page

NO

Uses air to protect personnel against dangerous chemicals . . .

air pressure inside of suit prevents harmful fumes from entering through seams

For protection of workers who come in contact with dangerous gas and liquid chemicals.

Gloves, attached to suit by zipper, permit on-the-spot replacement. Quick-disconnect coupling allows rapid removal of air hose for storage and instant attachment for emergency.



Protects against both gas and liquid chemicals

Description:

Inflated safety garment offers protection against both liquid penetration and gas seepage problem. Air from outside source inflates suit and constantly maintains controlled, positive air pressure within garment. With air pressure slightly greater on inside than outside, harmful fumes are pre-

vented from entering.

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For liquid protection, suit makes use of fabric impervious to virtually all organic and most inorganic compounds. To protect from corrosive acids, all seams are covered by fused strip of fabric.

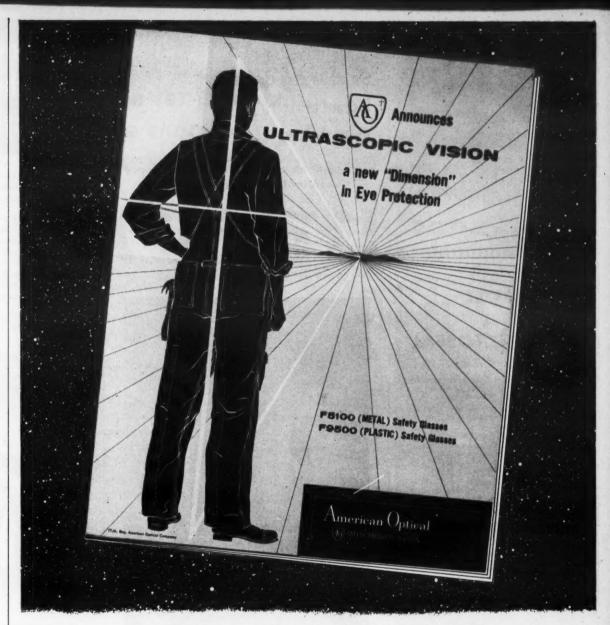
(Emergency suit is the product of the Standard Safety Equipment Company, Dept. CP, 232 West Ontario, Chicago 10, Ill. . . . or for more information check CP 1955 on form which is located opposite last page.)

Isotopes and instruments in same catalog

Printed in two colors, 48-page catalog describes complete line of radiation measuring equipment for industrial and research applications. Price list of 144 Carbon-14 labeled radioactive compounds is also included.

Not only are individual instruments described and specified, but suggested groupings of units for specific applications are shown. Scalers, count rate meters, Geiger, proportional, and scintillation counters are described.

Cat P is issued by Nuclear-Chicago, Dept. CP, 229 W. Erie St., Chicago 10, Ill. When inquiring specify CP 1956 on form which is located opposite last page.



To All Concerned with Industrial Safety:

Did you get your copy of AO's NEW Brochure on the "1956" Line of Ultrascopic Safety Glasses? Be sure to get it . . .

these evolutionary products will make your protection job easier.

Write to:

American Optical

Always insist on the A) † Trademark on Lenses and Frames



†T.M. Reg. by American Optical Company

SAFETY PRODUCTS DIVISION SOUTHBRIDGE, MASSACHUSETTS . BRANCHES IN PRINCIPAL CITIES

When inquiring check CP 1957 opposite last page



SAFE-SPOT Your Flammables Working Areas with PROTECTOSEAL STORAGE CABINETS

These convenient, at-the-job cabinets save dispensing time—avoid scattering dangerous flammables throughout the plant.

Aid enforcement of regulations that all flammables must be stored and returned to controlled storage points.

Designed in accordance with recommendations of National Fire Prevention Assn., these cabinets enable carrying up to 45 gallons of flammables when stored in approved safety containers.

Cabinet is of steel construction throughout with sturdy riveted and spot-welded double walls and 1½ inch air space between walls. It has three shelves and a double door walls. It has three shelves and a double door for unobstructed access to every can. Doors have a spark-proof 3-point lock and all closure contact points are non-sparking. Door sill is raised two inches above bottom of cabinet and is liquid tight to this point. Provision has been made for vapor venting when desired. Overall dimensions are 43" wide x 65" high by 18" deep.











Check coupon and attach to company letter head for Selection Chart and Price List.

In Canada: Safety Supply Co., Toronto

193	e Protectosed Company 32 So. Western Avenue icago 8, Illinois								
Ple lite	ase send as soon as possible the descriptive trature checked:								
	Hazardous Liquid Equipment Chart and Pri List illustrating and describing more than approved Fire Preventive Devices.	30							
	Special Information on Safe Storage Cabinet.								
Na	meTitle								
Co	ompany	_							
Ad	ldress	_							
Cit	Zone State	_							
4	44 444 444								

When inquiring check CP 1958 opposite last page

Switches stay closedlockout protects up to six men

Each man, with own padlock, may keep switch locked

Uses: Prevents switches being operated without knowledge of all maintenance men who might be in unsafe position.

Features: Provides for control by as many as six people, each having separate lock.



Device prevents accidental starting of machine

Description: Device is opened only when all padlocks have been removed. Practice is endorsed by National Safety Council.

(Lockout is product of Master Lock Co., Dept. CP, 2600 N. 32nd St., Milwaukee 45, Wis. . . . or for more information about this manufacturer's product, reader may simply check CP 1959 on form which is located opposite last page.)

How light should a gas cylinder be?

HARRISBURG Cylinders are made with an eye to the future and their ability to pass successive quinquennial tests.

They are as light as is consistent with wellbalanced design and construction. Their most important characteristic is their unequalled uniformity of wall thickness. This unusual regularity effects an even distribution of strength throughout. There is not a weak point in a HARRISBURG Cylinder, no spot too thin or too thick.

For the sake of safety and long service life, buy HARRISBURG Gas Cylinders.





Use

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NO

there is no excess weight in a HARRISBURG Cylinder.

When inquiring check CP 1960 opposite last page



Safely Ventilate MOISTURE and FUMES

Three outstanding features make Air-Van (R) Power Exhausters especially suited to situations where moisture and fumes are present.

- The motor is out of the air stream.
- A positive air seal-off creates a constant curtain of fresh clean air around the motor shaft. This absolutely prevents fumes from entering the. motor housing.



S.P. to 4".

Patents 2188741 — 2526290 Patents pending

Patented scroll effect design assures positive air removal. Research has shown that without scroll effect, efficiency beyond 1/4" S.P. is impossible.



Other Gallaher features include low silhouette, weatherproof design, low noise levels, and availability in special metals and finishes.

The GALLAHER Company

Ploneers in Research-Designed Power Roof Exhausters Omaha, Nebreska 4108 Dodge St.

When inquiring check CP 1961 opposite last page

CHEMICAL PROCESSING

Gas purges electric motor — keeps hazardous fumes outside . . .

inert gas, under positive pressure, prevents entrance of potentially explosive fumes

Uses: In areas where dangerous gas-contaminated atmosphere calls for use of explosion-proof motors.

Features: Under positive pressure, non-explosive gas inside motor keeps out volatile gases that might ignite.

Description: Gas-filled stator yokes are constructed of plate steel with gas-tight welds at all joints. Seals on shaft extensions prevent gas leakage outward along shaft. A gas pressurizing mani-



Inert gas under pressure keeps out dangerous atmosphere

fold is used to maintain positive pressure within housing. Other equipment includes explosion-proof instrumentation for temperature detection, liquid level alarm and water-flow metering. Motors are available in wide range of ratings.

(Motors are products of Allis-Chalmers Mfg. Co., Dept. CP, 1151 S. 70th St., Milwaukee 1, Wis. . . . or for more information check CP 1962 on form opposite last page.)

Concentrates on measurements for air pollution

Printed in two colors, four-page brochure describes several instruments useful in air pollution studies. Among these are nitrogen oxides recorder, ozone and smog instruments. Some specifications and performances are included along with descriptions.

"Measurement of Air Pollutants" is issued by Borman Engineering, Inc., Dept. CP, 5356 Riverton Ave., North Hollywood, Calif. When inquiring specify CP 1963 on form which is located opposite last page.

For better protection in the chemical processing industries

JAXCOLITE!

We don't imagine there has ever been a safety apparel material devised that is SO RIGHT for all the job risks in chemical processing as Jaxcolite-coated asbestos, duck or burlap.

Jaxcolite is a new compound. It has been thoroughly tested, proved and approved. Applied to the materials mentioned above, it provides exceptional resistance to the strongest acids and caustics, to heat, to burn, to molten metal splash, and of course to oil and water. Yet it wears well, is flexible, lightweight and comfortable. Its cost is low. And the amazing thing is that people who have used it refuse to buy anything else.

Steel-Grip makes a complete line of safety apparel made from Jaxcolite materials. The list is shown on this page. We earnestly urge you to send for trial swatches of this material and make any tests you want. It may prove to be *THE* answer to safety problems long unsolved. Send today.

*A product of Jaxind, Inc.





Steel-Grip JAXCOLITE Safety Garments

This new, better material is available in:

Coats Leggi Pants Spats

log-today.

Sleeves Gloves and Mitts
Aprons with Jaxcolite backs
Safety Curtains

We make safety apparel for every need... in Dynel cloth, aluminumcoated materials, Certified Asbestos, leather, wool, Perma-Proof materials, duck, etc. Write for cata-

When inquiring check CP 1964 opposite last page

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WHAT HAPPENS NEXT?

If management has been wise, a fire tragedy will be stopped before it starts...if not, in 20 minutes extensive destruction and total loss could readily be the result.

First-rate fire protection is essential to the continued success of any business. With C-O-TWO Smoke or Heat Fire Detecting Systems, plus C-O-TWO High Pressure or Low Pressure Carbon Dioxide Type Fire Extinguishing Systems, as well as PYRENE Air Foam Type Fire Extinguishing Systems for specific outdoor locations, your plant can have fast, positive round-the-clock fire watchman service simultaneously at each fire hazard point . . . a fire tragedy is stopped before it starts.

Furthermore, there is a personal sense of responsibility inherent with PYRENE—C-O-TWO Fire Protection Engineers that assures you of fully adequate firesafety . . . a definite plus in your behalf. Whether it's fire detecting or fire extinguishing . . portables or built-in systems . . . PYRENE—C-O-TWO means top quality backed by experienced engineering that results in operating superiority for you at all times.

Act now...don't take unnecessary chances with your investment any longer... the extensive experience of PYRENE—C-O-TWO over the years is at your disposal without obligation. Remember...a plant-wide fire protection survey skillfully executed today could be the means for greater profits tomorrow.



PYRENE - C-O-TWO

NEWARK 1 . NEW JERSEY

Sales and Service in the Principal Cities of United States and Canada



portable fire extinguishers . . . built-in fire detecting and fire extinguishing systems

CARBON DIOXIDE . DRY CHEMICAL . VAPORIZING LIQUID . SODA-ACID . WATER . CHEMICAL FOAM . AIR FOAM

When inquiring check CP 1965 opposite last page

Offers comprehensive guide to industrial skin diseases

Explaining occupational skin diseases and their prevention in practical terms, 42-page illustrated booklet has been prepared for industrial management. It will also be valuable for maintenance and custodial personnel.

Included are chapters on: incidence of occupational dermatoses, apatomy and physiology of skin and its appendages, causes of occupational dermatoses, prevention of occupational dermatoses, industrial skin cleaners, and a glossary.

Booklet points out major causes of occupational dermatitis and stresses need to safeguard workers from actual or potential skin irritants in advance.

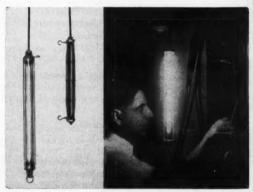
"The Prevention of Occupational Skin Diseases" is available from Association of American Soap and Glycerine Producers, Inc., Dept. CP, 295 Madison Ave., New York, N.Y. When inquiring specify CP 1966 on form opposite last page.

Provides glare free lighting for hazardous areas

portable unit is water and vapor tight — stays cool and is easy to hook on where needed

Portable fluorescent work lamp provides a safe, easy-to-handle method of temporary illumination for hard to reach areas and troublesome dark spots.

Unit is ideally suited for breweries, oil companies, and chemical plants where its small diameter has been used to advantage for barrel inspection. Using a long handle, light can be inserted into the bung-



Portable fluorescent lamp provides full lighting in cramped areas such as those experienced in electrical work. Close ups of two lights are shown at left

hole and easily removed. General Electric Company uses the 15-watt plastic units for use in wiring, and for inspection of unit substation cubicles which house heavy power equipment.

Phil plan inside Unit Confabrate not The adec by

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NOV

Phillips Petroleum Company's synthetic rubber plant uses eight-watt enclosed unit to inspect the inside casing of water wells.

Units are also being used by the Fruehauf Trailer Company for inspection of wells and of steel fabricated structures. Fluorescent lamp detects surface cracks in steel and flaws in welding where not detectable by incandescent light.

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The fluorescent units are also being used to provide adequate light within and between storage bins by the Cheli Air Force base at Maywood, Calif. Other applications for this type of equipment can be found in granaries and mills that require dusttight equipment to conform to safety regulations. The cool light also is a great improvement on working conditions in enclosed areas.

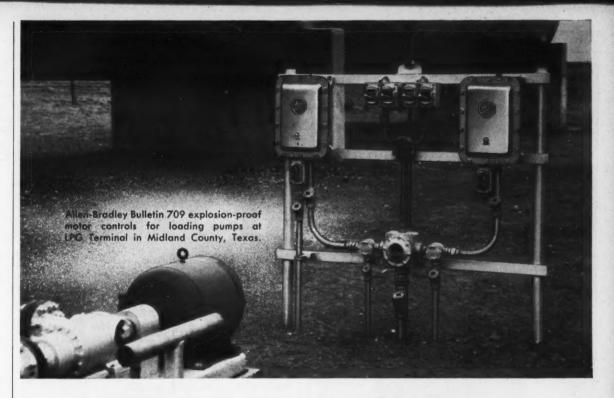
(Portable lamps are products of Day-Ray Co., Dept. CP, 1133 Mission St., South Pasadena, Calif. . . or for more information check CP 1967 on form which is located opposite last page.)



Non-sparking, corrosion-resistant with the strength of steel

Light-weight, high-speed, spur-geared hoist is available in an aluminum alloy that is non-sparking, nonmagnetic, corrosion-resistant, and has strength of steel. Equipped with a beryllium-copper chain, it is recommended for use in hazardous atmospheres and places where non-sparking properties, resistance to corrosion are important.

(Ohiolite Model 55 spur-geared hoist is a product of Ohio Hoist and Manufacturing Co., Inc., Dept. CP, 2157 Euclid Ave., Cleveland 15, Ohio . . . or for more information check CP 1968 on form opposite last page.)



For Hazardous Gases and Fumes, **Use Allen-Bradley Explosion-proof Starters**

The Sign of QUALITY Motor Control



Bulletin 600 Type 7 Manual Starter for Small Motors

Manual Starter with Pilot Light. The Allen-Bradley Handy Catalog lists ex weatherproof, and watertight starters as well as starters in general purpose enclosures.



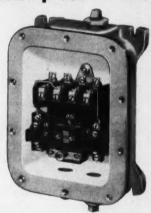
Bulletin 800 Type 7 Push Button Station.



The explosion-proof starters . . . shown above . . . are "safe" where hazardous gases or fumes are present. The bolted covers with wide machined flanges meet NEMA Type 7 specifications.

Allen-Bradley starters with bolted covers are no servicing problem; silver alloy contacts are used throughout, which need no filing, cleaning, or dressing. Cover removal can therefore be a rare event. You can install Allen-Bradley solenoid starters . . . and forget

Send for the A-B Handy Catalog.

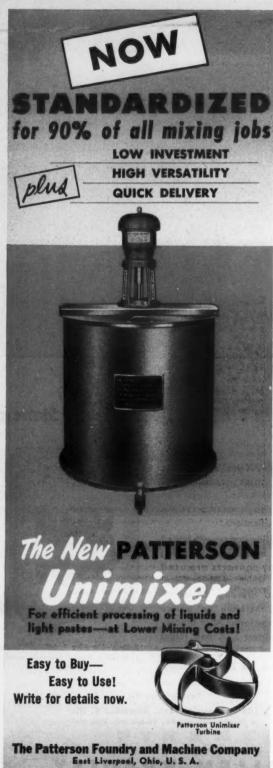


Bulletin 709 Size 1 Solenoid Starter in NEMA Type 7 explosion-proof enclosure.

Allen-Bradley Co. 104 W. Greenfield Ave., Milwaukee 4, Wis. In Canada-Allen-Bradley Canada Ltd., Galt, Ont.

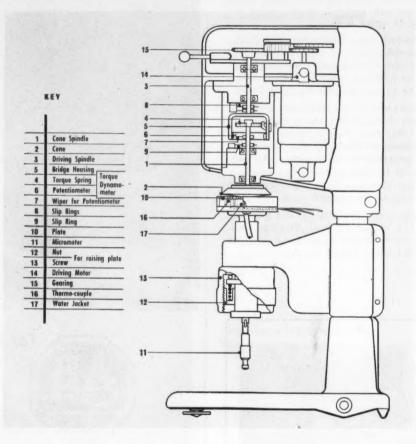


When inquring check CP 1969 opposite last page



The Patterson Foundry and Machine Company, (Canada) Limited Toronto, Canada

When inquiring check CP 1970 opposite last page



Sometimes flow curves are the only way to characterize non-Newtonian fluids. But measurement of shearing stress can be complicated by generation of heat within the sample. If the viscometer can

distinguish between shear and temperature effects

on apparent viscosity, interpretation of data can be improved

Analyzing flow properties of Newtonian and non-Newtonian fluids as paint, varnish, lacquers, printing inks, dyes, synthetic resins and plastics, other solutions and colloidal dispersions.

Ferranti-Shirley viscometer is capable of distinguishing between effect of shear and temperature on decreasing apparent viscosity of many non-Newtonian fluids.

Description: Instrument consists of a stationary flat plate and a slightly-conical rotating disc driven by a variable speed motor. Electronic motor control allows variable rate of shear over wide range. Sample fluid is sheared in narrow symmetrical gap between cone and plate. Viscous traction on the cone Fluid is pla 1 to indica Instru and o Meas servo Resul

> volta fied : speed visco Indic opera

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trol rpm, ting, prov scale units

readi Scale New

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Cone-plate viscometer consists of three units

cone exerts a torque on a dynamometer.

Fluid to be examined (less than 0.5 ml in volume) is placed on the plate and sheared by the rotating conical disc. Cone speed is directly proportional to rate of shear and is controlled over range from 1 to 1000 rpm. Viscous drag on cone is shown on indicator, is directly proportional to shear stress.

Instrument consists of three units, an indicator and control, a measuring unit, and an amplifier. Measuring unit is electronically-controlled DC servo motor which drives a torque dynamotor. Resulting voltage is directly proportional to rotational velocity and is "bucked" against a reference voltage in the amplifier unit. Difference is amplified and fed back to the servo motor. Rotational speed is therefore virtually independent of the viscous drag on the cone.

Indicator and control unit is a linear potentiometer operating over 3600° and providing variable control of cone speed from 10 to 1000 or 1 to 100 rpm, depending on gear ratio selected. Zero setting, cone and plate setting, range selection are all provided on a single multi-point switch. Mirror scale is five inches long and is divided into 100 units. Most sensitive range allows a full scale reading with only 20% of maximum drag on cone.

Scale can be calibrated to read directly in poise for Newtonian fluids. Scale readings for non-Newtonian fluids are directly proportional to apparent viscosity.

(Continued on page 131)

HARSHAW

industrial and laboratory

chemicals

Electroplating Salts, Anodes and Processes...

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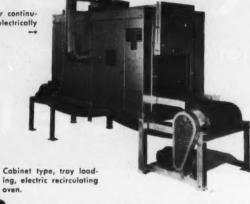
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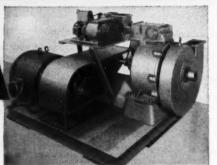
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If your product must be pulverized to ultrafine specifications and yet have controlled particle size distribution, you'll find proven Schutz-O'Neill "Superfine" Pulverizers best for the job.

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vital; by major cocoa powder, sugar, spice and pharmaceutical manufacturers; for emulsifier gums, resin, plastic and seaweed extract powders—wherever unexcelled quality grinding is required. Offered in 6 sizes ranging from 7½ to 125 HP with grinding chambers 12" to 28" in diameter.

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Send for literature on Schutz-O'Neill Pulverizers



SCHUTZ-O'NEILL COMPANY

343 Portland Avenue

Minneapolis 15, Minnesota

When inquiring check CP 1973 opposite last page

LABORATORY

Snatches paper sample from 1000 fpm web . . .

clips neat specimen safely from anywhere in paper web

Uses: Provides safe, convenient method for snatching samples from high-speed paper web.

Features: Long handle makes it possible to reach anywhere on web so that spring loaded jaws can take a reproducible "bite" from bond paper, chip board or other paper up to 30 point.

Description: When springloaded sampler is triggered, serrated jaw snaps through more than 180° and "bites" out a 2" diameter sample. Sample is trimmed as taken by a curved knife which jaw shears against.

Knife and jaw are located at one end of a long handle — with controls and cocking mechanism at the other. Overall length of this five pound sampler is 44". In order to use sampler, operator must have free access to web over a distance of 6'6" so that sampler can swing free. Due to its biting action, sampler cannot be used where paper is backed by felt.

Contrasted to snatching a sample from web's edge, use of sampler gives a reproducible sample. It is ready for lab bottle in three to five seconds — and no moisture is squeezed out by finger pressure.

(Sampler is a development of The Moore & White Co., Dept. CP 330 E. Hunting Park Ave., Philadelphia 24, Pa. Check CP 1974 opposite last page.)

Describes deionizer for laboratory

Six-page booklet describes simple laboratory ion exchange unit for water. Unit delivers one gpm and uses standard bulk resins. Industrial Laboratory Demineralizer is issued by Scientific Equipment Corp., Dept. CP, 5438 Lowell Ave., Indianapolis 19, Ind. Specify CP 1975 opposite last page.



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When inquiring check CP 1976 opposite last page



Bellows and checks, seals and connections are fabricated from Teflon* in the new CORSON-CERVENY MICRO-BELLOWS PUMP

Because of the use of Teflon in the Corson-Cerveny Micro-Bellows Pump, it can handle practically all acid and alkali chemicals over a wide temperature range.

Rates are 400 to 8000 ml per hour, and can be adjusted while pump is in operation.

Write for complete information, descriptive data and prices.

*DuPont's trade mark for its tetrafluoroethylene resin.

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The nation's most important institution for the development of atomic weapons, offers unlimited opportunity for individual growth and development. In addition to its continuing and ever expanding achievement in nuclear weapons research, the Laboratory is now pioneering in the fascinating fields of nuclear power and nuclear propulsion.

The community itself, nestling among pines on the lower eastern slope of the towering Jemez mountains, is delightful—an ideal small city in which to live and raise a family.

| Direct your inquiry and

background resume to DEPARTMENT OF SCIENTIFIC PERSONNEL

los alamos scientific laborator or the university of California los dandos, new metero

Manufacturer's catalog of lab equipment

Including an eight-page article on automatic titration instrumentation, 34-page booklet of scientific apparatus is latest revision of manufacturer's catalog. Titrator also described is applicable to titrations usually classified as potentiometric. Explanation is given of how second derivative of voltage/volume curve switches off buret valve to end the titration. Booklet also includes descriptions of carbon analyzer, null indicator, infrared drying lamp, microscope lamps.

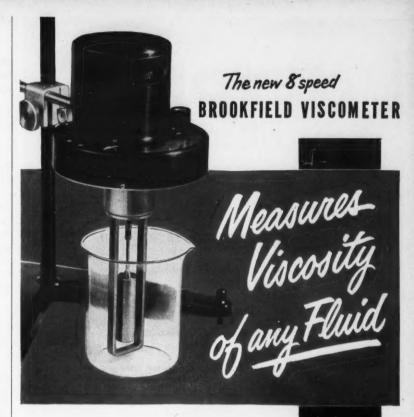
Scientific Apparatus and Methods is issued by E. H. Sargent & Co., Dept. CP, 4647 W. Foster Ave., Chicago 30, Illinois. When inquiring reader may simply check CP 1978 on the Reader Service slip which is located opposite last page.



Drains, dries and stores 25 glass graduates

Rotating support rack, built of steel rods and coated with neoprene rubber, dries and stores 25 graduated glass cylinders. Graduates are hung in inverted position for draining quickly into aluminum pan. Pan accommodates cylinders from 5 to 1000 ml capacity. Base is designed not to tilt. Drain pan is heavy-gage aluminum. Steel support rods are spot-welded. Upright-center-shaft of rack is chrome-plated. Unit is 18" high and 20" in diameter.

(Drying-rack is product of Arthur S. La Pine & Company, Dept. CP, 6001 S. Knox Ave., Chicago 29, Ill. . . . or for more information regarding this product reader may check CP 1979 on form opposite last page.)



With the new portable Brookfield eight-speed viscometer you can, at the flick of a switch, easily measure the viscosity of any fluid... readings down to 1/5 of 1 per cent with materials having viscosity of from 1 to 32 million centipoises.

If speed, accuracy, and versatility count with you, demand the new Brookfield eight-speed viscometer. A complete line of accessories makes the Brookfield adaptable to any viscosity measurement problem. Your prompt inquiry will bring complete information. Technical assistance available without obligation.

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Send the facts to:...

When inquiring check CP 1980 opposite last page

NG



"NETONE" Filter Paper is a neoprene impregnated kraft paper that offers decided mechanical and chemical advantages over standard

When compared to 60-pound unbleached kraft "NETONE" Filter Paper shows a 500% increase in wet tensile strength, wet burst factor increases from 6 to 57 and there is a marked increase in abrasion and crease resistance.

The following are a few test results indicating comparative resistance factors.

Solution	60-Pound Kraft	Wet Strength Resin	Neoprene Treated (3%)
H ₂ O	0 .	72 hr.	86 hr.
10% HCL	0	6 min.	4 hr.
10% NaOH	0	6 hr.	72 hr.

Write us about your requirements and we will be glad to send samples for your testing.

... And for your filter cloth requirements we weave fabrics of VINCEL*, Saran, Nylon, ORLON**, Glass, VINYON Nt, TEFLONtt, DACRON*** and Polyethylene. Samples sent on request.

- * TM—NFM Reg. U.S. Pat. Off.
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- *** TM for Du Pont polyester fiber
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When inquiring check CP 1981 opposite last page

LABORATORY

No loose weights needed for weighings under ten grams

Designed for custom-Uses: ary laboratory work, balance has a capacity of 200 grams and a sensitivity of 0.02 grams.

Torsion balance em-Features: ploys a recently developed strong, corrosion-resistant alloy. Oil damping is standard.

Description: Torsion bands of this balance are made of Elgiloy. Single beam with vernier balances all weights under ten grams no loose weights are used for gram or fractional gram readings.



5" pan of laboratory balance is removable

Calibrated beam is made of stainless steel and positioned over torsion mechanism to minimize effects of vibration. Balance is equipped with 5" diam removable stainless weighing pan.

(Model LA-3 Laboratory Balance is a product of The Torsion Balance Co., Dept. CP, Monhegan & Colfax Aves., Clifton N.J. Check CP 1982 opposite last page.)

Infrared applications are suggested

Four-page bulletin describes analysis of material by infrared absorption. Analysis applications are suggested.

"Infrared Spectroscopy" is issued by Electrical Testing Lab., Inc. Dept. CP, 2 E. End Ave. at 79th St., New York 21, N.Y. Specify CP 1983 opp. last page.

The Problem:

PUMPING 65% HF & 40% H2SO4 The Solution:

VANTON PLASTIC PUMP

No stuffing box! No gasket! No shaft seals!



Pumping 65% HF is tough enough, but when service requirements also include 40 % H-SO. the problem is really rough. An alert primary metals producer found the answer by replacing two conventional pumps with a Vanton "flextwo conventional pumps with a vanton "nex-i-liner" self priming pump and two alternate liners. Model PX60—10 gpm-with a polyethy-lene body block, a gum rubber liner for the HF and a neoprene liner for the HsSO₄ did the trick. Two trouble free plastic pumps in one!

When it comes to pumping those tough corrosive liquids and abrasive slurries, there's no pump like a Vanton!

Catalog 55 on request.



Gauge supplied with 4 ft. rubber hose and fitting for test connection.

Gauge with scale 0-7" W \$12.40

Gauge with reversible scale

— 0-15" W on one side,
and 0-8.5 ounces per sq.
in. on other side.

\$15.80

PUMP & EQUIPMENT CORP. 201 Sweetland Ave. Hillside, N. J.

division of Cooper Alloy Corporation

When inquiring check CP 1984 opposite last page

BACHARACH lanometer

- · Body is transparent, high-strength plastic extrusion.
- · Scale features easy readability; made of white plastic, with black scale divisions and numerals; 1/10" W scale divisions.
- Indicating Fluid of 1.9 specific gravity permits pressure readings to 1/10" W over entire scale on gauge of convenient size. Fluid is colored blue for visibility; is non-freezing to low temperature. Gauge is furnished filled ready for use.
- Shut-off Valves are conveniently opened or closed by rotation of knurled discs.
- · Scale is adjustable up or down to permit direct reading of pressure.
- · Blow-over seal automatically prevents spilling of fluid when gauge is subjected to pressure surges in excess of scale range.
- Body serves as reel for rubber hose.
- · For convenient attachment of gauge to pipe an adjustable mounting clamp is available as optional accessory.

Write for Leaflet 830

BACHARACH INDUSTRIAL INSTRUMENT COMPANY 7301 Ponn Avenue, Pittsburgh 8, Pa.

When inquiring check CP 1985 opposite last page

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an outstanding improvement in

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Full 31/2" Dial Face

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- Easy Readability
 Consult Your Directory
 WRITE FOR BULLETIN 350

PALMER

THERMOMETERS, INC.

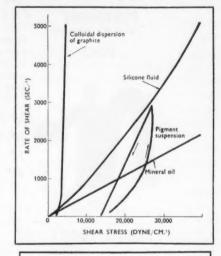
Norwood Ave., Cincinnati 12, Ohio. Mfrs. of Industrial Laboratory Recording and Dial Thermometers

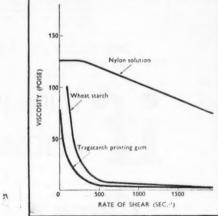
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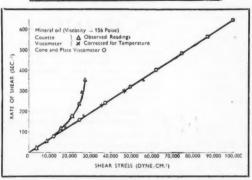
NOVEMBER, 1955

VISCOMETER

(Continued from page 127)



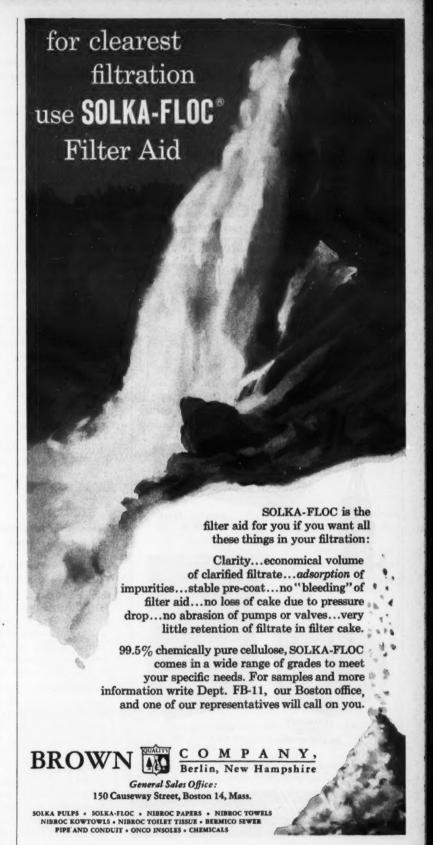




Shows results of Couette and cone-plate viscometers

Measuring unit is 27" high and has a base 14 x 16". Control and indicator unit is $5\frac{1}{2} \times 10 \times 7\frac{3}{4}$ ". Amplifier unit is $11 \times 19\frac{1}{2} \times 9\frac{3}{4}$ ". Total weight of all units is 129 lb.

(Ferranti-Shirley viscometer is a product of Ferranti Electric, Inc., Dept. CP, 30 Rockefeller Plaza, New York 20, N.Y. Check CP 1987 opp. last page.)



When inquiring check CP 1988 opposite last page



When inquiring check CP 1989 opposite last page

LABORATORY

Finds kinematic viscosity on non-corrosives like fuels, oils . . .

> readable to within 1%, unit has ranges of 0.5-5, 3-30 cs

> > Uses: Determines kinematic viscosity of fuels, light oils, other non-corrosive liquids quickly.

Features: Viscosity is readable to 1% at any point within scale range. Two ranges available are 0.5 to 5.0 and 3.0 to 30 centistokes.

Description: Viscometer can be supplied as a portable unit for laboratory or field use, or as a

panel-mounted unit. It weighs 8 lb, including thermometer, filter, filter cartridge, and fittings. Operation requires no equipment or special instruments not included with the viscometer.

(Type II Viscometer is a development of Commercial Research Laboratories, Inc., Dept. CP, 20 Bartlett Ave., Detroit 3, Mich. . . . or for more information check CP 1990 opposite last page.)

New glass formulated for pH electrodes . . .

> produces better results in alkali (above pH 10)

New formulation for glass used in pH electrodes will replace manufacturer's Type E glass. Known as E-2 glass, reformulated material performs better in alkali measurements. It is especially good in the critical range above pH 10.

In addition to its alkali-handling capacity, E-2 glass can be used over entire 0-14 pH range at temperatures from 15 to 100°C (60 to 212°F). At the same time it offers improved resistance to acids, surface deterioration, and aging.

(Glass electrodes made with E-2 glass are available from Beckman Instruments, Inc., Dept. CP, Fullerton, Calif. . . . or for more information check CP 1991 on form opposite last page.)

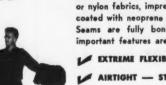
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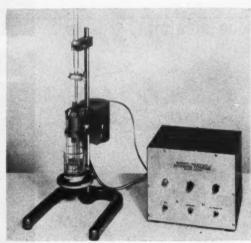
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When inquiring check CP 1994 opposite last page
NOVEMBER, 1955

Titrates automatically at full delivery to cut-off

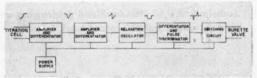
Uses: Automatically determining end-points in oxidation, reduction, acidimetric and alkalimetric titrations.

Features: Titrator determines end-point and shuts off buret without previous determination of shut-off point.



Determines end-point and shuts-off buret automatically

Description: Instrument uses second derivative method for potentiometric titration. Rate change of developed voltage actuates controller at end-point and buret valve is closed. Instrument can be used for special titration problems by determining, through trial, that rate change is sufficient to initiate controller action. If controller operates, approximation of end-point potential is not necessary. Titration is automatic with full delivery to cut-off point.



Block diagram of automatic titrator

Unit operates by amplification of titration cell potential which is then differentiated and filtered to produce a signal of sufficient amplitude to actuate buret valve.

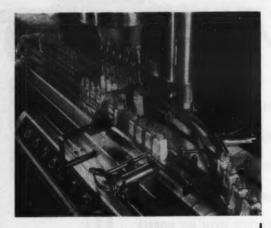
(Sargent-Malmstadt titrator is product of E. H. Sargent & Co., Dept. CP, 4647 W. Foster Ave., Chicago 30, Ill. Check CP 1995 opposite last page.)



When inquiring check CP 1996 opposite last page

WITH THE FILLER THAT HAS MORE OF EVERY-THING YOU NEED...

INCLUDING SPEED!



Speed, accuracy, versatility, ease of maintenance...no filler on the market today has as much of these qualities in combination as Mateer. For instance—

SPEED

Mateer Electric Fillers handle up to 240 fills per minute... and where powders are concerned are twice as fast as any other auger filler!

ACCURACY

Mateer precision engineering results in an accuracy rating of 99.7%. That kind of efficiency saves money!

VERSATILITY

Mateer Fillers handle all kinds of material ... you can change from one to another in minutes. No similar filler is as versatile.

CLEANLINESS

Mateer Fillers handle sterile materials, and under the most rigid specifications. All standard parts are approved for aseptic filling.

MATEER MODELS INCLUDING MANUAL, SEMI-AUTOMATIC AND FULLY AUTOMATIC ARE CUSTOM ENGINEERED TO YOUR SPECIFIC MEED

Send for our latest brochure—How Modern is Your Filling Equipment? Write Dept. C.

G. DIEHL MATEER CO.

Lincoln Highway, Strafford, Wayne, Pa.

When inquiring check CP 1997 opposite last page

packaging

After a 1/2 million dollar fire gutted their plant last January, Douglas Laboratories of Miami, Florida, took quick measures to convert from . . .

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...IN JUST SIX WEEKS

Judicious use of standardized packaging and conveying equipment put this plant back in action in a hurry

In January, 1955, a fire completely gutted the plant of the Douglas Laboratories, manufacturers of the famous Coppertone suntan oils and creams.

Instead of sitting down and planning some customized packaging lines for their products, management decided to make use of standard packaging and conveying equipment as the quickest way of getting back into full-scale production. This proved to be a wise choice and full-scale production was resumed in just six weeks.

There are three separate packaging lines: oil in glass bottles and lotion in plastic bottles, cream in jars, and cream in tubes. Raw materials in drums are delivered by truck to rear of warehouse and continue in a straight line to stainless steel processing equipment in rear of production building. Finished products in bulk are pumped to the three production lines.

Cartons of empty containers (bottles, jars and tubes) are unloaded directly from truck to port-





able wheel conveyors to their respective area in the production building which is on a single level. Portable wheel conveyors carry these cartons from this area direct to any one or all infeeds of production filling lines.

Line #1 — Oil in glass bottles and lotion in plastic bottles. Operator unloads cartons of bottles directly from conveyor onto straightline unscrambler which discharges onto chain conveyor running continuously through an MRM filler. From here the bottles go to a Resina single-head automatic screw capper and from there to a rotary accumulating table. Operator at unscrambler puts empty cartons on an overhead empty carton conveyor which carries these cartons to the end of the line for casing with filled containers.

On each side of the accumulating table, an operator labels front and back (label magazines are supplied

(Continued on page 137)



for safe, economical delivery of your product . . .



for fast supply service from conveniently-located plants . . .



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DRUM LINERS . BAGS . CARTON LINERS

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When inquiring check CP 1999 opposite last page

VERSATILE BULK FEEDING... from a trickle to a torrent with VELOFEEDER

A mechanical vibrating feeder especially designed for freeflowing chemicals, fertilizer, pellets and similar materials at lower cost. higher efficiency.

Here's Why!

Higher Output-300 to 50,000 lb./hr. hard granular materials; 300 to 30,000 lb./hr. soft ground materials.

Lower Power Needs—1/8 hp. motor powers unit—inexpensive as a 100-watt light bulb!

Smaller Space Needs—35 inches long, 17½ inches wide, 19 inches high. Standard vibrating tray 16 inches wide—stainless steel when required.

Easier Control-simple adjustment over wide operating range (near 0 to 50 fpm. max.).

Safer Operation-motor is explosion-proof (Class 2, Group G), where hazardous conditions exist, at slight extra cost. Complete dust enclosure on ap-

Less Vibration—working frequency is 1850 vibra-tions per minute; little or no vibration is trans-mitted to mounting installation (mounts with only 4 bolts!).

If you're interested in better bulk feeding at lower operating cost, write for Bulletin 5302 with complete specifications and drawing.

chardsoff, SCALE COMPANY, Clifton, New Jersey

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 San Juan MATERIALS HANDLING BY WEIGHT SINCE 1902

When inquiring check CP 2000 opposite last page

PACKAGING

Changes type instantly, for serial or odd-lot numbering

Uses: Special or short-run numbering operations where stamps must be changed after one or two impressions.

Type inserts held in Features: place by spring plunger, opened or locked by thumb-screw. Unit available for any type size or capacity.

Description: Holder body is of steel construction with special



Type inserts locked or released by thumb-screw

grip design. Unit is non-spalling and non-mushrooming.

(Model HTS holder is product of M. E. Cunningham Co., Dept. CP, 1025 Chateau St., Pittsburgh 33, Pa. . . . or for more information check CP 2001 on form opposite last page.)

Shows tape in use for packaging

Two-color brochure describes tapes used for finishing packages. Table provides full specifications for two types of tape. It also gives results in terms of ASTM and joint Army-Navy specifications.

Form P5-5 is issued by Polyken Products Dept., The Kendall Co., Dept. CP, 222 W. Adams St., Chicago 6, Ill. Specify CP 2002 on form opposite last page.

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When inquiring check CP 2003 opposite last page



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- Requires no installation . . . plug into any outlet. Handles textile and paper
- bags. · Simple to operate and maintain.
- Lowest priced bag closer on the market.

When inquiring check CP 2004 opposite last page

Minneapolis, Minn. Name.... Firm Name..... Address City.....

38 Glenwood Ave. N.

CHEMICAL PROCESSING

Dept. 9B

STANDARD PACKAGING UNITS

(Continued from page 135)

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with collated labels) on semi-automatic New Jersey Pony labellers and then places containers on narrow belt conveyors which feed at an angle to a belt conveyor. Containers are packed in empty cartons by operators on wheel conveyor and DuPont Celloseals are placed on bottle necks. Cartons then proceed on conveyor to an Elliott automatic carton sealer and discharge from this to a belt booster to warehouse on platform level. Wheel conveyors are then used to move the cartons to their respective storage areas.

Line #2 — Cream in jars. Cartons of prelabeled jars are fed on conveyor by operator to a Burt piston filler and discharged on conveyor to semi-automatic capper and cased and fed by wheel conveyor through carton sealer. Same conveyor as in Line #1 is used to move cartons to storage warehouse.

Line #3 — Cream in tubes. Bulk cartons of tubes are fed by operator to a Perl piston filler and automatically crimped and discharged onto belt conveyor for cartoning. They then move by wheel conveyor to carton sealer and finally to storage warehouse by same conveyor system as in Line #1.

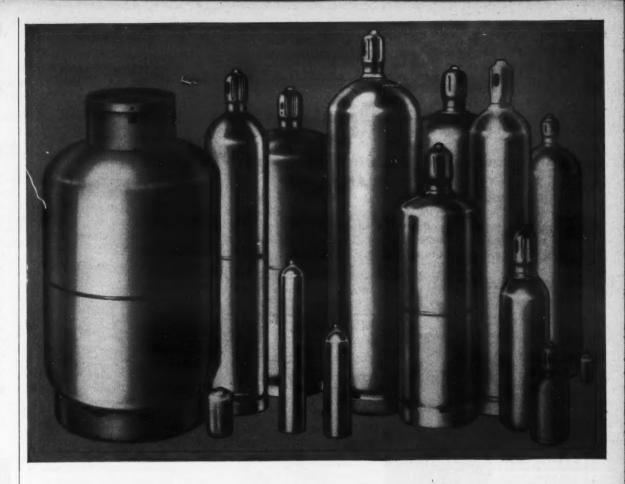
One of the major suppliers of equipment in the new setup was the Island Equipment Company which supplied the straightline unscrambler, belt conveyors, the overhead empty carton conveyor, and rotary accumulating tables.

Douglas Laboratories management is very happy with the performance of their packaging setup. Also, the new system has resulted in improved worker morale. There is very little lifting to do anywhere along the line and use of the automatic equipment has enabled the company to employ women almost exclusively.

(Except where noted, conveying and packaging equipment for the plant was provided by Island Equipment Corporation, Dept. CP, Brewster Rolls Royce Building, 27-01 Bridge Plaza North, Long Island City, N. Y. . . . or for more information reader may simply check CP 2005 on Reader Service slip which is located opposite last page.)

For more that's new in packaging . . .

check the Product Directory (pages 237 to 240.) All the latest products, services, and ideas presented in this issue are listed.



In all sizes ... for all compressed gases Hackney seamless or two-piece cylinders

Hackney compressed gas cylinders are designed with low tare weight for easy handling and freight-saving shipping—either empty or filled. Yet adequate strength is always assured by the use of selected, high-grade steel. The Hackney manufacturing process draws the side walls to uniform thickness that eliminates unnecessary weight.

Hackney cylinders are uniform in size and weight—uniformly easy to handle—uniformly durable for long service with the busy chemical shipper. Made in many sizes—for high-pressure or low-pressure shipment of all types of gases. Write today for full details.

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CONTAINERS AND PRESSURE VESSELS FOR GASES, LIQUIDS AND SOLIDS

When inquiring check CP 2006 opposite last page

New AUGER-MATIC Valve Bag Packer

SHAKES . . . SETTLES . . . AS IT WEIGHS AND FILLS CUTS YOUR BAG SIZE AND COST

AUGER-MATIC fills, shakes and weighs paper valve bags all in one operation. Just push the starter button and when desired weight is reached it shuts off automatically. Cuts cost of bags and packing costs on powdered, granular, pellet and fibrous materials . . . reduces dust to a minimum.



Fill Valve Bags as Small as 10 Pounds

Your Present Auger-MATIC is now more versatile than ever New small sizes spouts and augers now available to fit production requirements on 10 to 25 pound bags. You can change in a matter of minutes from packing 100 pound bags to the 10 pound valve bags . . . cut cost by using minimum size bags for exact weight desired.

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When inquiring check CP 2007 opposite last page

PACKAGING

Dispenser feeds label ready for use . . .

adjusts for sizes up to 2 x 21/3"

Uses: Dispenses single pressuresensitive label from roll, strips backing, in one operation.

Features: Unit will handle all sizes or shapes of labels up to 2 x 21/3".

Description: Single operation measures label, strips protective backing. Label is measured by



Dispenser feeds label, strips backing in one operation

pre-setting feed lever dial. Unit is of stainless, accepts label rolls up to 5" diam. Label adheres to any clean, dry surface without moistening.

(Dispenser is product of Kleen-Stik Products, Inc., Dept. CP, 225 N. Michigan Ave., Chicago 1, Ill. . . . or for more information check CP 2008 opposite last page.)

Tools and techniques of steel strapping

Printed in two colors, eight-page booklet shows typical applications of steel strapping and also pictures several types of tool used for this job. Accessories such as anchor plates, staples, seals, and corner protectors are pictured, too.

"Steel Strapping" is issued by Gerrard Steel Strapping Div., U. S. Steel Corp., Dept. CP, 2915 W. 47th St., Chicago 32, Ill. When inquiring specify CP 2009 on form which is located opposite last page.

For faster, more accurate blending of dry ingredients



Unequalled for dry mixing of chemicals, insecticides, powdered metals, fibrous materials, fertilizers, gelatin, glue, soap compounds, etc. Available in capacities from 20 to 250 cu. ft. Provides faster. more accurate blending, yet will not grind or reduce size of particles. Can be fitted with internal spray for introduction of limited amount of liquid.

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Lifters cut out and lift ingredients. Rotating cone tumbles stock. Empties completely after every mix,

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NEW TIN CHEMICALS IMPROVE PRODUCTS -CUT COSTS

Plastic shower curtains are just one product that organotin compounds can make better today. Could new tin chemicals help you improve products and cut costs? Write:



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When inquiring check CP 2011 opposite last page

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MAKES THEM ALL and Serves All Industries with ALL TRADE SIZES and STYLES from 1 through 12 gallons . . .

Drum-Type Closed-Head Containers—Required for the shipment of many thin liquids. Top offset for stable stacking; choice of pouring nozzles, spouts and openings.

Standard Lug-Closure Pails
—Suitable for many liquid and
dry products. Accurately formed
cover lugs crimp beneath curled
rim of the pail to make a closure
which defies all shipping hazards.

Hi-Bake Protective Linings

-Available on all

Hi-Bake Protective Linings

-Available on all
sizes and types of
VULCAN containers in a wide
variety for safe and
approved shipment of active and "hard
to hold" materials. Our laboratory is at
your service to determine the exact interior lining required for your products.

Pouring Pails and Drums— Combination shipping and dis-pensing containers which insure safe delivery and convenience in use. Lug Closure Pouring Pails have full opening for filling. A wide variety of metal and plas-tic spourk.

Extra Large, Extra Strong Pails—Extra bead at bottom re-inforces walls and permits roll-ing. Also supplied with drop handles large enough to receive gloved hand, sturdy enough to support a heavy load.

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of All Trade Sizes and Styles permit
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ship to the Chicago area by truck have
the "empty" stop at our truck loading
docks for a full or partial load on the
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Individualize Service

VULCAN's sole business is building
the finest steel containers; it has no
divided interests. Your individual requirements receive personal attention and shipments are made exactly as you specify in
small or large quantities from a carton
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P.O. Box 161-M Bellwood, Illinois (Chicago Suburb) Phone: Linden 4-5000

Representatives in Principal Cities In Canada: Vulcan Containers Limited: Toronto. "It's Better to Ship in Steel"

When inquiring check CP 2012 opposite last page

Lightweight vials of polyethylene have flip-up plastic caps, are non-shattering . . .

are resistant to acids and alkalis in water

Non-shattering vials of polyethylene have flip-up caps for easy opening. Opened or closed with one hand, containers are designed to hold pharmaceuticals in standard weights.

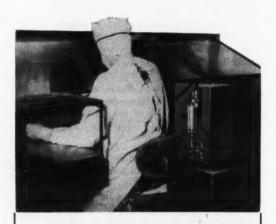
They are resistant to acids, alkalis in water as well as most active chemicals. Close-fitting lid is attached by hinge to vial and can be



Polyethylene vial has easyopening flip cap

flipped over with flip of the thumb. Translucence of polyethylene makes it easy to read printed labels through vial's wall.

(Polyvials are manufactured by Olympic Plastics Co., Inc., Dept. CP, 215 E. Washington Blvd., Los Angeles 15, Calif. . . . or for more information check CP 2013 on form opposite last page.)



Portable vial filler

in use at Cutter Laboratories filling 60cc vials with Normal Serum Albumin, Material is drawn from sterile, pressurized tank by this unit and dispensed into vials by operator. Filling rate is 2000 per hour. Equipment is completely portable and entire filling mechanism is removed for cleaning or sterilizing by loosening two thumb-screws permitting rapid change-

(Model AB-5 Filamatic is product of National Instrument Co., Dept. CP, 5005 Queensburg Ave., Balti-Md. . . . Check CP 2014.)





hard-to-pack chemicals travel in

Bemis Waterproof Bags



Also in the Bemis family, serving the chemical industry...

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Any dry, powdered or granular product travels economically in a Bemis Bag.

But Bemis Waterproof (laminatedtextile) Bags are your particular answer when you have a hard-to-pack product...one that requires special protection against moisture gain or loss, contamination, insect infestation, undesirable odors or loss of aroma.

If you need a little less than the super-protection of Bemis Waterproof Bags, your best bet is Bemis Flexiply Bags. These laminated, allcrinkled-paper bags are tough and shock-resistant . . . have stretch and flexibility...handle and stack easily.

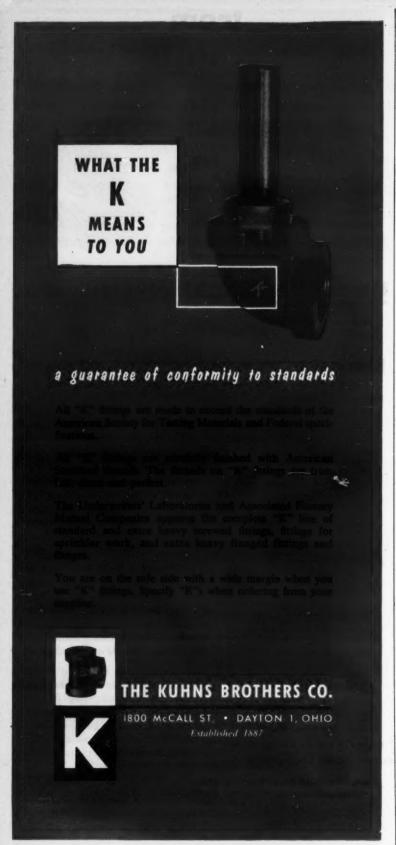
Your Bemis Man will help you determine which is the practical, economical shipping bag for you. With either Bemis Waterproof or Bemis Flexiply, you get the benefits of Bemis crisp, multi-color printing ... and Bemis multi-plant service.



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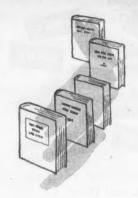
When inquiring check CP 2015 opposite last page

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When inquiring check CP 2016 opposite last page

Recent Books



Chemistry of the Pesticides

Reviewed by JAMES MCD. GRAYSON Entomologist Virginia Polytechnic Institute

"Chemistry of the Pesticides" by Donald E. H. Frear is an excellent presentation, from the chemical standpoint, of information on the insecticides, fungicides, herbicides, adjuvants, and rodenticides in use today. The insecticides are classified as synthetic organic, natural organic, and inorganic. The following information is presented about each, where applicable: historical, preparation or sources, properties, reactions, formulations, and analytical methods. Less comprehensive discussions are included of the fungicides, which are classified as organic, copper compounds, sulfur and inorganic sulfur compounds, mercury compounds, and miscellaneous inorganic fungicides. Approximately 85 pages are devoted to the organic and inorganic herbicides, the adjuvants, and the rodenticides. A rather extensive list of references is included at the end of each chapter, and a detailed index is included at the end of the book.

The author has succeeded in presenting a rather difficult subject in a style that should be easy to understand. This 469-page text could appropriately be among the first to be read by the beginner who wishes to become familiar with chemicals useful in control of insects, fungi, noxious plants, and rodents; and it could perhaps serve as a terminal source of information for those who do not wish to inquire into the other phases of these over-all problems. Other texts must be consulted, however, if information is desired on such subjects as equipment for applying pesticides, mode of action of poisons upon plants and animals, hazards to man and animals, effects upon the balance of plant and animal populations, and specific recommendations for the use of pesticides.

Thus the entomologist, the plant pathologist, and the specialist in weed or rodent control would need supplementary sources of information, whereas this text could be rather complete for the chemist or chemical engineer.

To obtain "Chemistry of the Pesticides" remit \$8 direct to D. Van Nostrand Co., Inc., Dept. CP, 250 Fourth Ave., New York 10, N. Y. When inquiring specify CP 2017 on form opposite last page.

Introduction to Theoretical Organic Chemistry

Reviewed by HILTON A. SMITH
Professor of Chemistry
University of Tennessee

"Introduction to Theoretical Organic Chemistry", written by P. H. Hermans and edited and revised by R. E. Reeves, is organized along the lines of physical theories and reaction mechanisms rather than by the categories based on structural organic chemistry. After first treating such topics as molecular geometry, bonding of atoms, polarizability, interaction of molecules with light and similar subjects, the author discusses such topics as attraction between molecules, acids and bases, and tautomerism followed by a number of chapters on reaction types. These include carbonium ion reactions, substitution and addition reactions, hydrolysis and condensation of esters, aromatic substitution, free radical and redox reactions. There are also chapters on reaction velocities, acid-base catalysis and the influence of substituents on

The book appears to be well written. The text is supplemented with numerous diagrams and models which seem to be clear and well chosen. The author has held the

reviews of current technical and reference works . . summarized for you by authorities in the field working with the CP staff

use of mathematical formulas to a minimum. For this reason any of the treatments are descriptive or qualitative rather than quantitative in nature. This will undoubtedly appeal to many readers. There is a short appendix dealing with quantum-mechanical theory.

This book should be of particular interest to those persons who, though well-grounded in the facts of organic chemistry, desire an acquaintance with a theoretical but qualitative approach.

To obtain "Introduction to Theoretical Organic Chemistry" remit \$9.75 direct to Elsevier Press, Inc., Dept. CP, 402 Lovett Blvd., Houston, Texas. When inquiring reader may simply check CP 2018 on the Reader Service slip which is located opposite last page.

Emulsion Polymerization

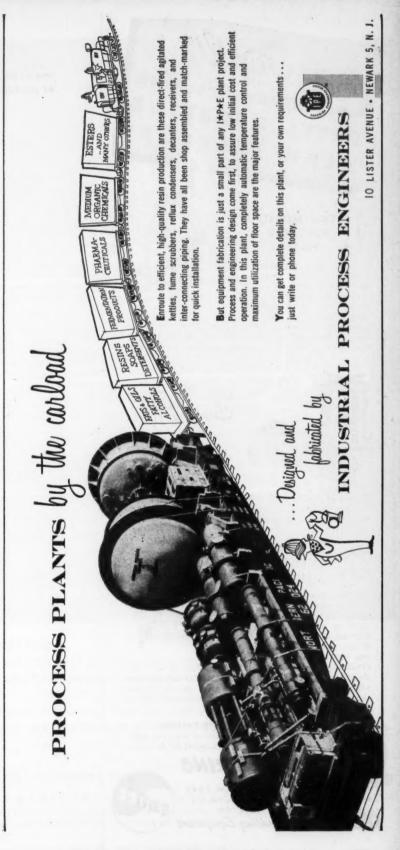
Reviewed by R. W. LAUNDRIE Government Laboratories Akron, Ohio

"Emulsion Polymerization" by Bovey, Kolthoff, Medalia, and Meehan, is the ninth of a series of monographs on the chemistry, physics, and technology of high polymeric substances. The present monograph is commendable because it presents in a concise but systematic way an interpretation of the nature, products, and kinetics of emulsion polymerization. Emphasis has been placed on theoretical fundamental principles. Experimental results such as graphs, diagrams, and tables are given for illustrative purposes only. The book contains eleven well-written and documented chapters. Most start with an introduction followed by theoretical and experimental considerations.

The first chapter is a historical review of polymers and a general consideration of polymer properties and their formation; the second and third give an account of the elementary concepts of free radical polymerization; the fourth deals with the general aspects of chain transfer agents and of their importance in emulsion polymerization; the fifth chapter stresses the primary importance of detergents in emulsion polymerization and serves as a partial background for a good understanding of the kinetics of emulsion polymerization of styrene which is given in the sixth chapter. The seventh chapter is a discussion of the general considerations of inhibitors and retarders of polymerization and their practical importance in commercial emulsion polymerizations; the eighth chapter is devoted to copolymerization of various monomer pairs; the ninth chapter lists the procedures for following the course of polymerization, and methods for the study of latex and determination of properties of polymers; the final two chapters are discussions of the GR-S recipe used at about 122°F and activated redox recipes used at about 41°F for the production of synthetic rubbers. Appendixes include both author and subject

This 445-page book will not only be of interest to the beginner but also to the specialists in the field of emulsion polymerization. The subject material is well supported with references which are important to readers who wish additional information either for research purposes or background material pertinent to those less acquainted with emulsion polymerization systems. Like most books that are written to present the readers with as complete a coverage of a technical subject as possible without a too extensive mathematical treatise, the authors have only occasionally incorporated basic mathematical concepts of certain phases of the subject.

To obtain "Emulsion Polymerization" remit \$12.50 direct to Interscience Publishers, Inc., Dept. CP, 250 Fifth Avenue, New York 1, N. Y. When inquiring specify CP 2019 on the Reader Service slip which is located opposite last page.



When inquiring check CP 2020 opposite last page

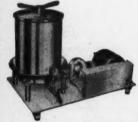
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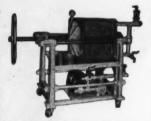
Typical of Ertel craftsmanship is this Positive Seal Multi-Purpose Disk Filter. The outstanding feature of independent filtering elements provides positive seal

of any type filtering medium. Cylinder prevents loss of liquid

— particularly well adapted for volatile liquids as well as
many other ordinary filtering requirements.

3. EU MODEL UTILITY FILTER

The Erter Filter that's designed to use asbestos filter sheets, filter cloth, filter paper or filter cloth and filter aid. Standard units in bronze, nickel plated, stainless steel or hard rubber



circulatory system. Comparison and operation records prove the EU Model unmatched in design, versatility and operationlife. Experience has shown that the great majority of filtration problems can be solved by your consultation with our engineers. May we help you?



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When inquiring check CP 2021 opposite last page

In solvent recovery process used for the manufacture of photographic film at Eastman Kodak —

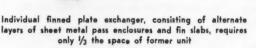
finned plate exchangers improve heat transfer

Increased heat transfer coefficient of 50% over plate exchanger and 100% over conventional shell and tube type is furnished by finned units, reducing operating costs.

By GORDON WEYERMULLER, Associate Editor with J. N. TOMLINSON, Engineering Div. Eastman Kodak Company, Rochester, N.Y.

Problem: Heat exchangers formerly used for solvent recovery in the manufacture of photographic film at Eastman Kodak Company did not provide a high enough heat transfer coefficient for the most efficient operation. Vapors coming from film casting machine have solvent concentrations in the range of 0.5 to 3.0% by weight. Conventional shell and tube exchangers originally used for cooling air and condensing these vapors had a





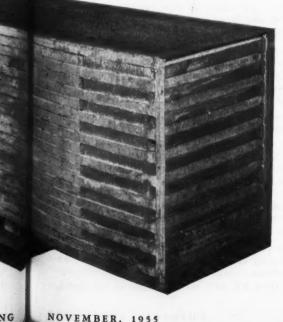
Average Operating Conditions for Different Exchangers In Use at Eastman Kodak Co.

	Conventional Shell & Tube	Plate	Finned Plate
Entering temp, hot, °F	156	138	176
Entering temp, cold, °F	-74	-87	-68
Leaving temp, cold, °F	117	112	155
Log mean temp diff, °F	39	26	21
Pressure drop, inches of water	13.0	13.7	12.0
Overall heat transfer coefficient,			
Btu/hr/sq ft/°F	2.2	3.3	4.9

heat transfer coefficient of 2.2 Btu/hr/sq ft/°F. This type of unit also required considerable operating space.

In the complete system at Eastman, four air exchangers of this type were used plus one shell and tube unit in which low temperature brine was circulated, all five being connected in series. In order to improve the heat transfer, plate air interchangers, made up of a series of flat plates 1/2 to 1" apart, were substituted for the four shell and tube units. Cold air, and hot, vapor-laden air passed countercurrently. Same type of shell and tube brine exchanger was used. Although this change improved heat transfer to 3.3, it was still lower than desired.

Solution: In 1950 encased fin and tube coils were substituted for the brine tank exchanger and (Continued on next page)



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When inquiring check CP 2022 opposite last page



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When inquiring check CP 2023 opposite last page

PROCESSING

FINNED PLATE EXCHANGERS

(Continued from preceding page)

the first group of four finned plate interchangers installed. Finned plate interchanger consists of alternate layers of fins and separator sheets bonded together to form unit exchanger sections. Bank of finned plate units is manifolded together and sealed in a sheet metal casing.

Individual finned plate units are 16 x 20" in crosssection and 4½ or 7' in length. Each exchanger unit has 10 cold air passes and 10 hot air passes. Fins are a channel-shaped stamping, the legs of which are offset to allow for uniform spacing when stacked into a slab assembly.

Results: Use of finned plate exchangers has increased the heat transfer coefficient to 4.9 Btu/hr/sq ft/°F. This is a 50% increase over plate exchangers and a 100% improvement over conventional shell and tube units. Finned plate units have reduced costs, proving a considerable savings. Finned plate system requires only about 1/3 the space as that needed by a conventional shell and tube exchanger of equal capacity. No maintenance has been required on any of the finned units since they were placed in service.

(Finned heat exchangers are products of Modine Manufacturing Co., Dept. CP, Racine, Wis...or for more information check CP 2024 on form opposite last page.)

Company offers pilot-plant-size turbulent-film evaporator . . .

has heat transfer area measuring one square foot

Uses: Laboratory and pilot plant studies on evaporation, distillation, and deodorization of liquids, slurries, and gases.

Features: Unit is compact enough so that it can be moved to different locations if desired. Evaporator has heat transfer area of one square foot and operates on same principle as large production models produced by company.

Description: Agitated-film method of evaporation permits difficult, heat-sensitive, frothy, or heavy viscous materials to be concentrated in a single pass, with practically no losses. Unit is built of 316 stainless steel throughout and can withstand heating media up to 250 psi and 700°F. Jacket is baffled, permitting use of hot oil, if desired. Rotor speed may be varied. Evaporator can be supplied as individual unit, or as complete packaged plant, including vacuum equipment, pumps, and instruments.

(Pilot-plant-size Turba-Film evaporators are product of Rodney Hunt Machine Company, Dept. CP, 53 Mill Street, Orange, Mass. . . . or for more information check CP 2025 on form opposite last page.) Three handi at sai

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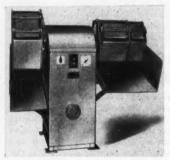
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multi-barrel unit speeds tumbling operations

Uses: Mixing, blending, dewatering, separating, and other small scale tumbling operations.

Features: Tumbler is equipped with three different size barrels, which makes it possible to process multiple loads at the same time — resulting in saving of both time and operating expense.

Description: Unit is fitted with 2, 1.1, and 0.67 cu ft capacity barrels. Smaller barrels are on one side and the 2 cu ft barrel is on



Tumbler's movable chutes can be tilted backward or forward

the other, thereby balancing the load on either side of shaft. Barrels can be furnished with vinyl plastic lining, if desired.

Movable chutes under barrels can be tilted forward or backward to aid in draining off liquids and materials separately. When tilted backward, chutes form safety guard around barrels.

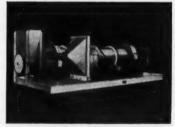
(Super Twin Barrel Finisher is product of Rampe Manufacturing Company, Dept. CP, 14915 Woodworth Avenue, Cleveland 10, Ohio ... or for more information check CP 2026 on form which is located opposite last page.)

For more information on product at right, specify CP 2027
. . . see information request blank opposite last page.





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Calciner and Cooler for Continuous Processing at Temperatures from 900° F. to 2100° F.

Oil fired units can be rotated at speeds ranging from 2 Rev./Hr. to 5 Rev./Min. to control the length of time the material is under treatment.

Temperatures range from 1000° F. to 2200° F. depending upon the material being handled. Burners are controlled automatically with radiation pyrometers. Heated material is passed through a Bartlett-Snow externally water cooled cooler—and cooled slowly, at gradually declining temperatures. Use Bartlett-Snow's complete facilities—including materials handling—on your next job. It fixes unit responsibility—assures the smooth synchronized operation of the entire project—and utmost economy and satisfaction.

BARTLET B-SNO CLEVELAND 5. OF

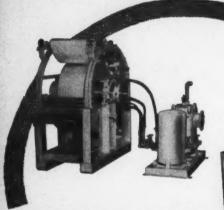
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PILOT PLANT FILTERS
help reduce your development costs



Here's a low-cost way to work the kinks out of your filtration problems

before you scale up.

If it looks like a job for a rotary drum vacuum filter, ask for the FEinc String-or-Scraper Discharge Filter. It's furnished with both the FEinc String Discharge and the FEinc Scraper Discharge mechanisms. You can try first one, then the other. It also has the FEinc submergence washing and compression dewatering mechanisms. These can be operated separately or disconnected if desired. This all-purpose pilot plant filter is available to you on a unique rental-purchase plan, requires no capital investment. Ask for details.



If it's a relatively free-filtering job, such as a coarse crystalline or fibrous pulp, try the simpler FEinc Horizontal Filter first. Particularly good for counter-current or multiple-stage washing. Only 3 ft. dia., with amazingly high output.

Whatever your problem, if it's continuous filtration, talk to FEinc first. Our engineering service is backed by 35 years of experience, and by our well-known ability to deliver filters that are tailor-made to fit the job... at no more than standard costs.



Ask for Bulletin

Filtration Engineers, Inc.

CUSTOM DESIGNERS AND MANUFACTURERS OF ALL TYPES OF CONTINUOUS FILTRATION EQUIPMENT FEinc

155 ORATON STREET . NEWARK 4, N. J.

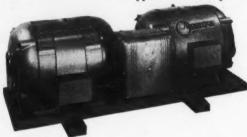
When inquiring check CP 2028 opposite last page

Generator conquers barrier to high-frequency power at low cost

Develops 20,000 cps, paves way for large-scale ultrasonic uses

Uses: Furnishing high frequency power to ultrasonic transducers.

Features: Generator is capable of producing the low-cost high-frequency power required for energizing multiple arrays of transducers needed for large-scale commercial ultrasonic applications. Such power



Five-kw generator can energize up to ten 400-watt ultrasonic transducers

has previously been generated only by expensive electronic equipment, which made commercial use of ultrasonic techniques economically impractical.

Description: Generators are available in sizes ranging from 2 to 150 kilowatts. A 230-volt, 20,000-cps, single-phase, 5-kw generator driven by a 15-hp, 3-phase, 60-cycle, 220/440-volt, AC, squirrel-cage motor can energize up to ten 400-watt transducers. When strategically located in a chemical solution, each transducer will cause intensive cavitation through a large field.

The explosive forces caused by the collapse and formation of millions of entrapped vapor bubbles at the rate of 20,000 times per second is in order of several hundred atmospheres pressure. Surface tension is destroyed, chemical activity is accelerated, and the entire process is expedited.

(High-frequency generators are product of Acoustica Associates, Inc., Dept. CP, Glenwood Landing, L. I., N. Y. . . . or for more information check CP 2029 on form opposite last page.)

For a guide to processing ideas . . .

You'll find what you need in the Product Directory on pages 237 to 240. All products and processes are listed there.



PURIFIES WATER BY REMOVING DISSOLVED SOLIDS

The most reliable method of purifying water containing dissolved solids such as calcium carbonate, magnesium sulphate, sodium chloride, silica, or many other common contaminants, is ILLCO-WAY ionXchange (also known as de-ionization). Many adaptations of the basic methods are available including the new mixed-bed de-ionizers which produce water described by one user as of "fantastic purity"

PRACTICAL EQUIPMENT MADE BY "ILLCO-WAY"

Illinois Water Treatment Company has pioneered in the design and manufacture of practical equipment for ion X change processes ever since the first year that the de-ionization idea came out of the laboratories. A wealth of experience has been accumulated so that "ILLCO-WAY" is today recognized as the leader in the development of commercially successful installations.

ADAPTED FOR PURIFYING RADIOACTIVE WASTES

With the rapid expansion of the field of nuclear science, various needs have developed for ionXchange, particularly in the purification of wastes contaminated by radioactivity. ILLCO-WAY equipment has been designed and built for this and other purposes in several plants employing atomic energy. For further information on the uses of ILLCO-WAY ionXchange, write...

ILLINOIS WATER TREATMENT CO.





840 CEDAR ST. ROCKFORD, ILLINOIS

NEW YORK OFFICE: 141 E. 44TH ST., NEW YORK 17, N. Y. CANADIAN DIST. PUMPS & SOFTENERS, LTD. LONDON, ONT.

When inquiring check CP 2030 opposite last page

CHEMICAL PROCESSING

Caked materials de-lumped at 5 to 15 ton/hr rate by crusher . . .

machine feeds and ejects automatically, requires no screws, augurs, or other auxiliary devices

Uses: De-lumping caked materials.

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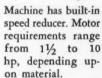
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Features: Machine feeds and ejects automatically, requiring no screws, augurs, or other auxiliary devices. There need be no concern for angle of nip, as teeth pull material in by grabbing force. Depending upon material being processed, de-lumping rate is between 5 to 15 tons per hour.

Description: Machine accepts up to 16" chunks and reduces them to desired size. Dry and friable

materials reduce to their original state. Wax-like, compressible, or wet materials, are de-lumped down to ½" on standard model, and finer in modified machine. Unit is compact and designed for rugged service. Crusher has provision for mounting on pipe legs to any desired height. Machine has built-in





Compact crusher is designed for rugged service

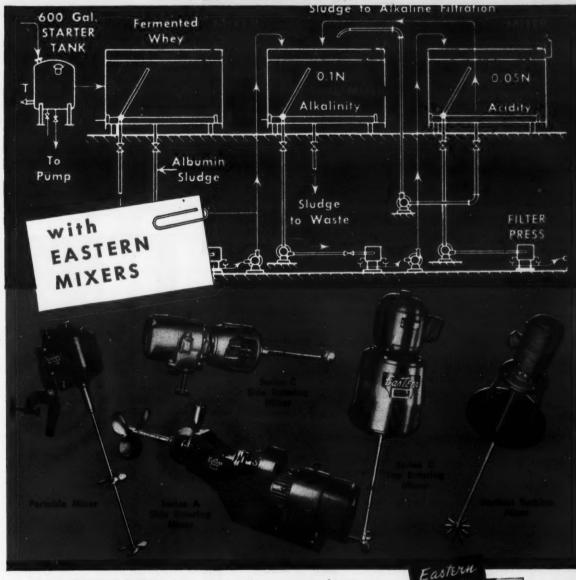
(Supreme 502P crusher is product of Franklin P. Miller and Son, Inc., Dept. CP, 36 Meadow Street, East Orange, New Jersey . . . or for more information check CP 2031 on form opposite last page.)

Covers wide range of heaters for plating solutions

Wide range of electric heaters designed for heating of cleaning, pickling, and plating solutions are described in illustrated four-page bulletin. Kilowatt ranges from 0.6 to 100 with a wide selection of corrosion-resisting sheath materials and automatic thermostatic controls are shown. High-speed, far-infrared heaters for mechanized parts drying and radiant heaters are also illustrated.

Bul 750 is issued by Edwin L. Wiegand Company, Dept. CP, 7500 Thomas Boulevard, Pittsburgh 8, Pa. When inquiring specify CP 2032 on form opposite last page.

RELIABLE FLUID MIXING in PROCESSING



Eastern's Mixers are designed to meet the needs of today's chemical and industrial processes. Many types are available to satisfy all conditions of fluid consistencies and tank sizes. Selection may be made from a wide range of horsepower, speed, and construction materials. Motors with various voltage ratings and enclosures are also furnished.

PORTABLE MIXERS

Series H at 1725 R.P.M., Series S at 1125 R.P.M., and Series G at 420 R.P.M. are available in motor ratings from 1/20 to 5 H.P. Also available are special speeds, variable speeds, as well as air driven models.

TOP AND SIDE ENTERING

Series A, extra heavy duty for large tanks, are available in side entering units

only within a range of 5-30 H.P. with standard speeds of 280, 420, and 1150 R.P.M.

Series C, for average tank capacities, are available in sizes of ¼ to 10 H.P. at these standard speeds: 1725 R.P.M. (up to 5 H.P.); 1140 R.P.M. (up to 10 H.P.); 420 R.P.M. (up to 7½ H.P.); 280 R.P.M. (up to 5 H.P.). Available in both horizontal and vertical models.

TURBINE MIXERS

Eastern's Top and Bottom Entering Turbine Mixers find particular application where liquid blending requires gentle, yet thorough agitation.

Models are available in sizes from ¼ to 40 H.P. Standard speeds are 56, 68, 84, 100, 125, 155 R.P.M.





When inquiring check CP 2033 opposite last page



When inquiring check CP 2034 opposite last page

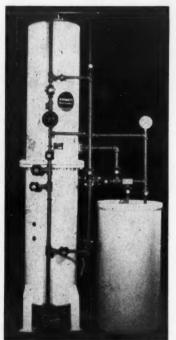
PROCESSING

Compact demineralizer delivers water at rate of 360 gph

Uses: Purifying relatively small quantities of water.

Features: Compact unit can deliver pure water at rates up to 360 gph. Inside surface of mixed-bed tank is protected with six coats of Heresite lining.

Description: Unit holds 5.4 cu ft of resin mixture. Tank measures 15" in diameter and is 7' 7" high. Effluent from demineralizer has



Mixed-bed demineralizer holds 5.4 cu ft of resin mixture

0.05 ppm total electrolyte content.

Carbon dioxide is reduced to 0-1 ppm and silica to about 0.1 ppm. When unit is exhausted, resin bed is regenerated with 12 lb of sulfuric acid for the cation exchanger and 20 lb of caustic soda for anion exchanger. Same regenerating tank is used alternately for both acid

(Model MBD-15 demineralizer is product of The Permutit Company, Dept. CP, 330 West 42nd Street, New York 36, N.Y. Check CP 2035 on form opposite last page.)

and caustic soda regenerants.

Efficient Practical

SOLVENT EXTRACTION AT LOW COST

The York-Scheibel multistage extraction column is ideal for simple countercurrent extraction; and for fractional liquid extraction in which the feed material is simultaneously contacted by two selective and immiscible solvents.

Check these features . . .

- POSITIVE MIXING
- POSITIVE PHASE SEPARATION
- . SINGLE, COMPACT COLUMN
- . HIGH THROUGHOUT CAPACITY
- . HIGH EFFICIENCY LOW STAGE HEIGHT
- . LOW COST PER STAGE



complete illustrated catalog valiable describing laboraory, pilot plant and large scale attraction columns. YORK PROCESS EQUIPMENT CORP 4 Central Avenue WEST ORANGE, N. J.

When inquiring check CP 2036 opposite last page



NEW BOWEN SEMI-WORKS SPRAY DRYER

- * COMPACT
- * HIGH YIELD
- * EASY TO CLEAN
- ★ LOW OPERATING

• At last a fully prefabricated spray dryer requiring only hours to erect. The new reasonably priced Bowen Semi-Works Spray Dryer makes available a small, compact unit requiring a working area of only 7x9 feet, completely prefabricated and transportable through usual factory openings. Surfaces in contact with the product and feed material are of stainless steel thruout. Drying temperatures are variable between 200°F and 750°F to accommodate a wide variety of materials.

An interesting illustrated booklet, Bulletin 36, is available. Send for it today.

BOWEN SPRAY DRYERS Always Offer You More!

BOWEN ENGINEERING

North Branch 1, N. J.

When inquiring check CP 2037 opposite last page

Only 5 minutes needed to clean filter . . .

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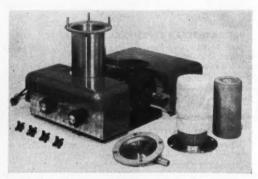
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entire element lifts out so that it can be washed

Uses: Various filtering operations in laboratory, pilot plant, or small production shop.

Features: Portable filter can be cleaned in five minutes. Hand-tightened tank cover is quickly removed and entire element lifts out so that it can be thoroughly washed.

Description: Unit has 250-gph capacity and can be used with either annular or porous stone element. Filter stands 14" high, measures 14" square at base, and weighs 45 pounds. All working parts are protected from dirt and drippings by cabinet, which



Portable filter has 250-gph capacity. Components can be quickly disassembled

serves as firm base for the filter. Unit can be furnished with stainless steel and rubber-lined components, or all iron parts. By placing disposable paper cartridge over the standard annular element, filtering can be accomplished without filter aid. This precedure cuts cleaning time by 90%.

(Sel-Rex "Streamliner" filter is product of Bart-Messing Corporation, Dept. CP, 229 Main Street, Belleville 9, N. J. . . . or for more information check CP 2038 on form opposite last page.)

How to choose the right industrial mixer

How to choose the right industrial mixer is told in illustrated eight-page bulletin. Six basic points informatively explain major aspects to be considered when buying large mixers. Information is included on correct mixing action, uniformity of batches, conversion of automatic batch operation, and importance of installation space.

Bul R-1701-B1 is issued by Worthington Corporation, Advertising & Sales Promotion Department, Dept. CP, Harrison and Worthington Avenues, Harrison, New Jersey. When inquiring specify CP 2039 on form opposite last page.



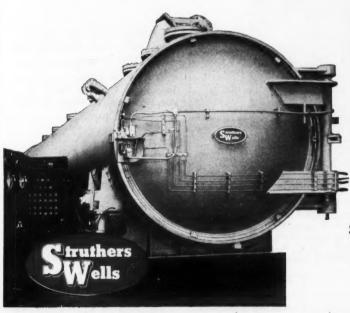
QUICK OPENING BOLTLESS DOORS PATENTED

For Horizontal or Vertical Pressure Vessels

Designed and Built to Your Specifications

Struthers Wells' patented engineering achievements provide important advancements in Quick Opening Doors—for all sizes of vulcanizers, devulcanizers, impregnators, sterilizers, ovens, cylinders, etc. These fast, smooth-operating doors feature simplicity of design, ease of handling, savings in floor space, and a lifetime of dependability. Illustrated are a few applications of Quick Opening Doors on large and small vessels. Consult Struthers Wells for doors best suited to your specific requirements.

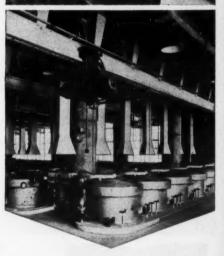
Write for Bulletin SW-553











STRUTHERS WELLS

TITUSVILLE, PA.

Plants at Titusville and Warren, Pa.
Offices in principal cities

When inquiring check CP 2040 opposite last page



DINGS-The world's largest exclusive builder of magnetic separation equipment—now brings to all industry an entirely new concept of efficient, low cost tramp iron removal . . . through the completely new line of non-electric Alnico Perma-Plate Magnets, incorporating the DYNAMIC principle of magnetic

Designed and built to remove tramp iron from moving material carried in chutes, ducts, on conveyor belts and slides, these new powerful, guaranteed permanent Alnico V magnets are used to separate iron from grain, feed, chemicals, foodstuffs, plastics, fertilizers, minerals, textile fibers, liquids and wet and dry solids of many kinds. Perma-Plates are also needed wherever tramp iron or iron of abrasion can damage processing equipment, create fire hazards, or contaminate product purity.

Clip the coupon for full details.

The new Dings DYNAMIC Perma-Plates are plate type permanent non-electric Alnico magnets designed to attract moving iron. This proven design is the result of hundreds of extensive dynamic tests . . . not based on static tests.



As shown by illustrations (1) and (2), a pull test is a static test having negligible bearing on the magnet's ability to attract rapidly moving iron. It is not dynamic.

Illustration (3) shows a lift test, again a static test having negligible bearing on the magnet's ability to attract



moving iron. It is not dynamic.

ayamic.

Illustration (4) shows a chite test... the only true test of a plate magnet's ability to attract rapidly moving iron. This is the DYNAMIC principle of operation of the new Dings Perma-Plate Magnets.

The new Dings Perma-Plates are available in 4 basic types, offering effective magnetic ranges from 2½" through 4". Each type is available in 35 standard sizes from 4" through 72" wide.

Complete details of these versatile DY-NAMIC Magnets are given in the new Catalog 1205-D, just off the press. Mail



Dings

DINGS MAGNETIC SEPARATOR CO. 4731 W. Electric Ave. Milwaukee 46, Wis.

MAIL	THIS	COUPON	TODA

DINGS MAGNETIC SEPARATOR CO. 4731 W. Electric Ave., Milwaukee 46, Wis. Send copy of new Catalog 1205-D to:

Name			
Company			
Address			
City	Zone	State	
			. PP1552/3

When inquiring check CP 2041 opposite last page

PROCESSING

Handy pocket-size kit tests water hardness on-the-spot . . .

checks to nearest 0.2 grain/gal

Measuring hardness of water delivered by water softeners.

Features: Pocket-size kit measures hardness to nearest 0.2 grain per gallon. Tests can be made onthe-spot and take only one minute.

Description: Contained in a plastic box that measures 43/8 x 13/4 x 1", the three-ounce kit consists of glass vial and dropper bottle holding one ounce of softener reagent. This is enough to make 140 tests on water averaging 0.5 grain per gallon.



Water hardness measuring kit is contained in 43/8 x 13/4" box

When reagent is added, water sample turns first red and then blue. Number of drops needed to turn sample blue determines hardness. ("Zeo-Kit" is product of Calgon, Inc., Dept. CP, 323 Fourth Avenue, Pittsburgh, Pa. Check CP 2042 opposite last page.)

Catalog covers full line of electric vibrators

Complete line of electric vibrators is covered in illustrated eight-page catalog. Information is included on mounting, installation, specifications, and prices. Cat 11 is issued by The Cleveland Vibrator Company, Dept. CP, 2828 Clinton Avenue, Cleveland 13, Ohio. Specify CP 2043 opposite last page.

OR DEMINERALIZED

Distilled Water - Barnstead Stills remove from the water all impurities: ionizable and nonionizable, including silica, organic gases, and bacteria. Capacities from ½ to 1000 gallons per hour.

Demineralized Water-Barnstead Demineralizers produce mineral-free water at substantially lower operat-ing cost. Where the removal of ionizable impurities only is required, demineralization is the answer.

PUT BARNSTEAD EXPERIENCE TO WORK FOR YOU

75 years of Barnstead Pure-Water Experience . . . over 60,000 Barnstead installations throughout the world . . . guarantee a tailor-made solution to your water problem! Write for free consultation with Barnstead Engineers today.

New York Office KIngsbridge 8-1557 larnstead

66 Lanesville Terrace, Forest Hills, Boston 31, Mass. When inquiring check CP 2044 opposite last page

MANUFACTURERS OF PROCESSING MACHINERY SINCE 1885

They must be good: Six SUPER MASTER GRINDERS on the job, milling product of particle fineness for ADHESIVES to the tune

of over-100,000 pounds daily!

One of SIX No. 5 -75 H.P. Master-Grinders at the Huron Milling Company, Harbor Beach, Mich.



Send in a small quantity of your material for Free Test Run and Report by the Gruendler Laboratory.

DATA AVAILABLE for any particle sixing, which would include SHREDDING, PULVER-IZING, BREAKING, MIXING and BLENDING.

CRUSHER & PULVERIZER CO. 2915 North Market St. Dept. CP11 St. Louis 6, Mo.

When inquiring check CP 2045 opposite last page

Mobile self-contained mixing unit ideal for textile dye house or finishing room . . .

> jet impingement action mixes 5 to 50 gallon batches in 10 minutes or less

Uses: Mixing solutions in textile dye house, finishing room, or wherever large volume of solids must get into small volume of solution.

Features: Machine is entirely self-contained and needs only to be plugged into any convenient electrical outlet. Unit is equipped with easy-rolling truck for mobility.

Description: Mixing unit is simply designed to



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Self-contained mixing unit can transfer solutions to dye beck storage tank in from I to 21/2 minutes, depending upon size of batch

facilitate cleaning and fast operation. Tank and pump are made of type 316 stainless steel. Mixing is performed by jet impingement. Pump and jet tube do mixing. Usually, 5 to 50 gallon batches mix in 10 minutes or less. With no paddles or other moving parts in mixing chamber, tank and pump are easy to flush and clean.

Unit may also be used as storage tank. Dust cover protects contents from contamination. Solutions can be transferred by

pump from unit to storage container on the dye beck in from 1 to $2\frac{1}{2}$ minutes, depending upon size of batch.

(Hydromixer is product of Pako Corporation, Dept. CP, 1010 Lyndale Avenue North, Minneapolis, Minnesota . . . or for more information check CP 2046 on form opposite last page.)

Dryers dry air or gases

Information, condensed specifications, and dewpoint and selection charts about dryers are included in four-page brochure. Units are designed for drying air or gases used to actuate tools, valves, instruments, etc.

Bul D-101 is issued by The C. M. Kemp Manufacturing Company, Dept. CP, 405 East Oliver Street, Baltimore 2, Maryland. When inquiring specify CP 2047 on form which is located opposite last page.

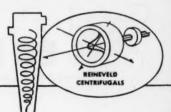


74 & P Cyclone Thickeners and Classifiers



Heyl & Patterson

55 FORT PITT BLVD. . PITTSBURGH 22, PA.



PHONE COURT 1-0750

When inquiring check CP 2048 opposite last page



ENGINEERED AGITATION

NEW

IN DESIGN, IN SCOPE

Get your answers from Nettco — manufacturer of the most complete line of agitating equipment in the country.

FIND OUT

. . . how Nettco standardized components can save you money — how this broad line of tank top, side entering, pipe line, and portable agitating equipment can be engineered economically and specifically to meet your own agitation requirements.

FIND OUT

... how the right agitator — the right shaft speed — the right horsepower — the right stirrer — will pay you big dividends in power economies and process time savings.

CHECK

... with Nettco Engineers for experience-proven answers to your agitation problems. New England Tank & Tower Co., 93 Tileston Street, Everett 49, Mass.





See us at the Chem Show — Booth No. 52



When inquiring check CP 2049 opposite last page

PROCESSING

British atomic research yields tower packing 'by-product' . . .

gives twice performance of conventional plates, packing

Uses: Tower packing.

Features: Performance is reported to be twice that of conventional plates and packings, on basis of capacity, equivalent heights.

Description: Originally developed by British Atomic Energy Research Establishment for large-scale separation of hydrogen isotopes by distillation of water, packing consists of a cellular structure formed from strips of expanded metal. Openings are louvered and pitched in direction of liquid flow.

The liquid flow follows the slopes, combining and redividing at each intersection, while the gas passes through the mesh openings and creates a finely divided spray. Pressure drop is moderate — at liquid rates close to flooding point, pressure drop is on the order of 1" of water per ft of packed height. On shutdown, packing drains completely free.

Packing can be used in pilot plant columns down to 12" ID as well as in largest commercial towers. It can be constructed to be self supporting up to heights of 30 ft. (Spraypak tower packing is available in US from Fractionating Towers, Inc., Dept. CP, 5711 Boulevard East, West New York, N. J. . . . or check CP 2050 opposite last page.)

Flotation cell uses, advantages

Use of flotation cell for recovering coarse mineral, lowering reagent costs, reducing losses in plant tailings, increasing capacity of circuit, and lowering power consumption is explained in illustrated four-page folder.

Bul F12-B9 is issued by Denver Equipment Company, Dept. CP, P. O. Box 5268, Denver 17, Colorado. When inquiring specify CP 2051 opposite last page.

GAYCO CENTRIFUGAL SEPARATORS

GAYCO Separators, equipped with the adjustable centrifugal sizing fan — an exclusive GAYCO feature — make closer separations. Closer separations bring about higher production through efficient removal of the fines made by the mill. Closer separations bring about higher quality products by eliminating all undesirable oversize.

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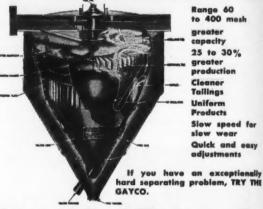
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"TIMKEN BEARING EQUIPPED" GAYCO brings you all these:



Universal Road Machinery Co.

Rubert M. Gay-Division
Factory and Laboratory, Kingston, N. Y.

117 LIBERTY STREET NEW YORK 6, N. Y.

Canadian Representative: F. H. Hopkins & Co., Ltd.,

3500 Decarie Blvd., Montreal, Qu

When inquiring check CP 2052 opposite last page

PACKAGED HEAT FOR FORCED AIR INSTALLATIONS

...TRENT "FOLDED-and-FORMED" HEATING UNIT PLUG



Here, in one compact "package" is a complete unit for efficient, high temperature controlled heating of forced air recirculating systems in annealing and tempering furnaces, heating ducts, baking and drying overs. Multiple banks of Trent "Folded-and-Formed" heating element racks are assembled, wired and mounted in a self contained insulated plug, complete with terminal control box. The unique construction of Trent "Folded-and-Formed" exposed ribbon type resistor elements assures maximum high temperature heat transfer... greater radiating surface per square inch of element cross section than any other type of electrical heating element.

TRENT "FOLDED-and-FORMED" HEATING UNIT PLUGS ARE GUARANTEED FOR FIVE YEARS!

TRENT FFP TYPE HEATING UNIT PLUG GIVES YOU

- Maximum Frame Temperatures to 1500°F.
- Velocities up to 2000 Ft./Min.
- . More Wattage per Cubic Foot
- Watt Densities from 10 to 30 Watts per Sq. Inch
- Higher Temperature Operation
- 120, 240, 480 or 600V—3 Phase or Single Phase

These features add up to quicker heating and faster cooling, longer element and unit life . . . better controlled heat at lower cost.

Let our experienced Trent Heating Engineers analyze your requirements and recommend the best installation for your operations . . . or ask to see the new Trent "Folded-and-Formed" Heating Element booklet.



When inquiring check CP 2053 opposite last page

Only 5 seconds needed to open heat exchanger door . . .

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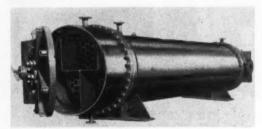
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speeds cleaning and cuts maintenance costs

 U_{SeS} : On heat exchangers, autoclaves, sterilizers, other pressure vessels. Door is particularly suited for use on heat exchangers that carry high-fouling liquids and require frequent entry for cleaning and inspection.

Features: Doors take only about five seconds to open, withstand temperatures of -70° up to 400° F, and pressures ranging from full vacuum to 300 psi.

Description: Doors may be used on either horizontal or vertical installations. They can be swung open manually or by means of a pneumatic cylinder. Tight-fitting closing gasket automatically seats itself when closed. Mechanical lock device prevents door from being opened while vessel is under pressure.



Quick-opening door withstands temperatures from -70° to 400°F, pressures from full vacuum to 300 psi

Bars on door are inserted into and withdrawn from fittings in the vessel by hand-operated lever. Latter is located at center of door and opens with a turn of 60° with about a 15-lb pull.

(Lever-Lock doors are product of The Patterson-Kelley Co., Inc., Dept. CP, 10 Lackawanna Avenue, East Stroudsburg, Pa. . . . or for more information check CP 2054 on form opposite last page.)

Porous stainless filter medium featured on water filters

Complete description of standard sizes of water filters, for use with filter-aid to handle 8 to 939 gpm, is presented in illustrated two-page bulletin. The diatomite units use porous stainless steel filter medium which makes them suitable for applications where corrosion resistance, high temperature, and high pressure are important factors.

Release 214 is issued by Micro Metallic Corporation, Dept. CP, 30 Sea Cliff Avenue, Glen Cove, New York. When inquiring specify CP 2055 on the convenient Reader Service slip which is located opposite last page.



Then Save Time and Money with THE LIXATE PROCESS

In a single piece of equipment, The Lixate Process combines a method of dissolving rock salt without agitation and a method of filtration.

MAKES BRINE AUTOMATICALLY

The Lixator makes and filters all the brine you want or need with no human aid whatever and can be located anywhere—even hundreds of yards from buildings and points of use.

UNIFORM QUALITY AND STRENGTH

The Lixator produces *only* 100% fully-saturated brine, self-filtered, crystal clear. May be accurately reduced in strength, without testing, without delays.

PIPED TO POINTS OF USE

Turn a tap, there's your brine—where you want it, when you want it. No handling of salt or finished brine. Economy! Convenience! Efficiency! All Lixator installations are custom-engineered.

EVAPORATED SALT DISSOLVERS, TOO

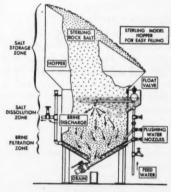
Rock Salt or Evaporated Salt—International provides both in all forms. It provides also any technical advice on salt, brine, or auxiliary equipment, required by users, for either kind of salt.

INTERNATIONAL SALT COMPANY, Inc.

Scranton, Pa.

SALES OFFICES: Atlanta, Ga. • Chicago, Ill. • New Orleans, La. • Baltimore, Md. • Boston, Mass. • Detroit, Mich. • St. Louis, Mo. • Newark, N. J. • Buffalo, N. Y. New York, N. Y. • Cincinnati, O. • Cleveland, O. • Philadelphia, Pa. • Pittsburgh, Pa. • Richmond, Va.

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HOW LIXATOR WORKS

Rock Salt, fed by gravity, keeps tank filled. Water in dissolution zone dissolves salt, becomes 100% saturated brine. Lower bed of rock salt acts as filter. Result-crystal clear, fully saturated brine.

It costs nothing to find out what The Lixate Process can do in YOUR plant! SEND THIS COUPON NOW!

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Industrial	Div	ision	, Scr	anton	2,	Pa.

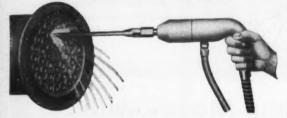
Without obligation, please have an International Industrial Engineer call to show me how The Lixate Process might be adapted to my plant.

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City	Zone	State

When inquiring check CP 2056 opposite last page



WILSON PGX TUBE CLEANER



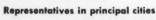
The Wilson PGX Tube Cleaner weighs only 61/2 pounds, but it knocks out scale ten times faster than ordinary mechanical cleaners. It cleans at rates as high as ten feet per minute—removes deposits from flinty hardness to soft gum as well as chemical compounds such as carbonates, sulphates, sulphates, silicates, chlorides, coke, marine growths and iron oxides.

In the range between 1/2" and 11/2", few jobs are too tough for the versatile and rugged PGX cleaner. The work is done by a long-wearing carbide cutter bit and a stream of air or water forced under high pressure through a hollow shaft and beyond the cutter tip. It flushes as it cuts—no need to worry about jammed, burned-out bits—no need for lengthy, expensive preliminary work to prepare the tube for cleaning.

Don't let valuable equipment stand idle for days while you struggle with inadequate cleaning tools. Put the pressure on with PGX.

Also ask about two teammates of the PGX—the PG for 1/2" to 1" ID and the TP 301 for 3/8" to 2" ID. All

three models can be fitted with accessory expanding brushes and expanding scrapers. These and scores of other tube maintenance tools are described in the new, free Wilson Catalog 77. Write for it today.

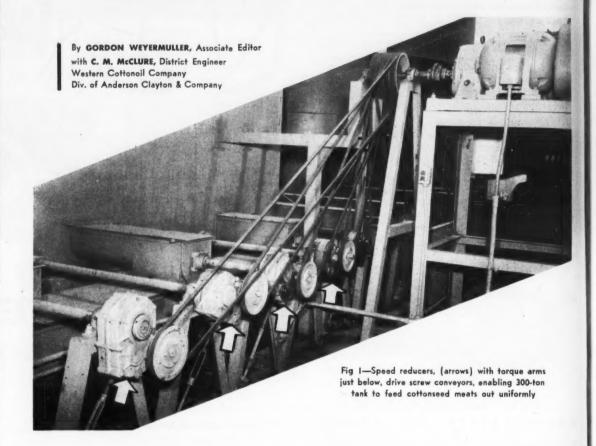


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Cable address: "Tubeclean", New York

TUBE CLEANERS • TUBE EXPANDERS

When inquiring check CP 2057 opposite last page

engineering and maintenance



At Western Cottonoil Co., plant -

eliminates shutdowns with 175 speed reducers

Low-cost, speed reduction units solve misalignment problems, can be installed in a limited amount of space

At the Lubbock, Texas, mill of Western Cottonoil Co., production time formerly lost through faulty driving mechanisms has been eliminated through the use of approximately 175 speed reducers on various pieces of equipment in the plant. These speed reducers are low in cost and can be readily installed on equipment even where a limited amount of space is available.

Speed reducer is mounted directly on driven shaft

instead of in conventional manner. This eliminates use of sliding base for belt takeup, flexible coupling, and foundation for reducer. Unit is locked in place by collars on each side of reducer itself. Wide choice of constant speeds is available by use of different size sheaves in V-belt drive.

Three typical examples of how the reducers are used to advantage at Western Cottonoil are shown in accompanying photographs. Details of each of these

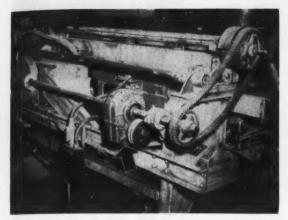


Fig 2—Through-shaft mounting permitted this speed reducer (arrow) to be installed on this saw filer in a limited amount of space

installations follow:

Fig 1—Screw Conveyor — Cottonseed meats stored in a 300-ton holding tank were difficult to feed out uniformly. Mixture, composed of a portion of the hulls and the kernels, consists of particles which vary considerably in shape, size, and density. These variations caused considerable segregation while emptying tank.

In order to remedy situation, nine screw conveyors were installed in tank bottom, four feeding at 5 to 9 rpm in one direction, and five at the same speed in the opposite direction. These screw conveyors are driven by means of nine speed reducers, as shown in photograph. Belt guards have been removed for purposes of clarity. These drives are out-of-doors and must withstand the weather.

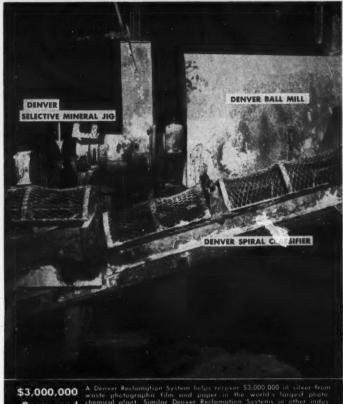
Present arrangement has proved to be satisfactory. Tank now feeds out uniformly without delays in production. If foreign material, such as tramp iron, locks down a screw, remainder of material in tank can be fed out without damage to drive.

Fig 2—Linter saw filer — This machine is used for sharpening teeth of linter saws which cut the lint from the cottonseed. Machine illustrated was originally used in a processing area equipped with line power shaft transmission, using a flat belt drive. When the saw filer was transferred to a mill equipped with unit motor drives, it was not practical to make a speed reduction with sheaves.

Instead of using a standard gearmotor reduction unit, speed reducer shown in photograph was installed at considerably less cost. Through-shaft mounting made this installation possible in a limited amount of space.

Fig 3—Conditioner — This steam-jacketed machine is used for giving cottonseed meats a final conditioning before they pass to an expeller, used for squeezing out a portion of the oil in the meats. Originally

(Continued on next page)



\$64,000 Net Profit in 4 Months

A large steel corporation recovers non thalene from the coaling water in this cake plant with a Denser Reclamatic System. Recovery of the by product non thalene is 100%. Sole of the by produce nonthalene produced a net profit.

\$3,000,000 Recovered Annually A Denver Reclamation System helps recover \$3,000,000 in silver from worste photographic film and paper in the world's largest photochemical plant. Similar Denver, Reclamation Systems in other industries recover platinum from retractory slag, aluminum, magnesium, zinc and managenese from slag, law ash coal from stream bottoms, and de ink words engine for require.



DECO testing lab shows how profits can be recovered from industrial waste

If you have a valuable product in your industrial waste, find out how Deco can help you recover it at a profit. These case histories are a few examples of how company engineers have worked with the Denver Equipment Company to perfect reclamation systems. These systems have made profits for their owners.

Your engineers are welcomed in our laboratories. We have complete batch test and pilot plant facilities.

There is no obligation to you for a preliminary analysis and recommendation. Write today for details on how to send your samples.

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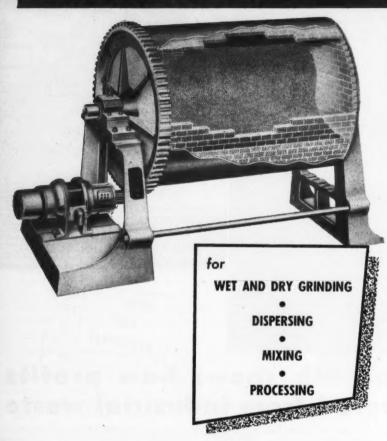
Year

A Denver Reclamation System is reclaiming farmerly discarded molding sand, and saving a large foundry this amount early year. Deca test investigations often can stee and develop a system producing a new profit giving his plant a new cam petitive advantage in a profit tight in dustry.

When inquiring check CP 2058 opposite last page

ING

ABBÉ Engineering Ball and Pebble Mills



ABBÉ Engineering Ball and Pebble Mills are available in capacities from 30 lbs. (dry), 5 gal. (wet), to 14,000 lbs. (dry), 2500 gal. (wet).

It will pay you to investigate these, as well as Abbé Jar Mills and Jar Rolling Machines, which cover every need and capacity.

Write for Catalogs 73 and 77 and complete data.





ABBE ENGINEERING COMPANY 50 Church Street, New York 7, N.Y.

Address Department 46

When inquiring check CP 2059 opposite last page

ENGINEERING & MAINTENANCE

SPEED REDUCERS

(Continued from preceding page)

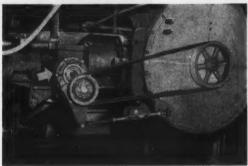


Fig 3—Production losses have been eliminated and maintenance costs cut by the use of speed reducer on this cottonseed meats conditioner

shaft visible through present drive (see photograph) was driven by chain from driving shaft. Former drive was difficult to maintain and resulted in lost production time.

Chain and sprocket drive was replaced with multiple V-belt and sheave, driving through speed reducer, as shown in photograph. This drive is exposed to hot, oily vapors.

Of the 175 speed reducers in service at Western Cottonoil, majority of units are used on screw conveyors, eliminating need for gear reducers or backshaft drives for speed reduction. When used on the tail shaft of a screw conveyor, they solve problems encountered from bearing wear or misalignment in the conveyor itself.

Most of the speed reducers were placed in service in 1951. Only a minimum of maintenance has been required on the units since that time. Experience has shown that double lip rubber cover seals are highly satisfactory for the operations here.

(Torque-Arm Speed Reducers are product of Dodge Mfg. Corp., Dept. CP, Mishawaka, Ind. . . . or for more information check CP 2060 on form opposite last page.)

Converts $1\frac{1}{2}$ " scrap tubing into flanged tail pieces in 10 seconds

Tool that converts $1\frac{1}{2}$ " scrap tubing into flanged tail pieces in just 10 seconds is announced. In this way scrap tubing can be converted to tail pieces for sinks, flushometer valves, and other fixtures. Tool is simple and easy to operate.

(Flanging tool is product of J. A. Sexauer Manufacturing Co., Inc., Dept. CP, 2503-05 Third Ave., New York 51, N. Y. . . . or for more information check CP 2061 on form opposite last page.)

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SOLUTION IRVING GRATING



For heavily abused areas:

IRVING Continuity Armouring

concrete-filled steel grating floor will not crack or break up. Inexpensive to install, it eliminates costly repairs AND IS SAFE.

Non-Sparking and Corrosion-Resistant

ALUMINUM GRATING

extra-light, self-draining, self-ventilating, economical, strong and durable.

Perfect for Chemical Plants where fire is a hazard.

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IRVING SUBWAY GRATING CO., INC.

OFFICES and PLANTS at 5050 27th St., Long Island City 1, N. Y. 1850 10th St., Oakland 20, California

When inquiring check CP 2062 opposite last page

CHEMICAL PROCESSING

With pipe ferro

Uses: and trial in Feature traps materinge strenge

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Without restricting flow, pipeline units trap forces fines . . .

1/2 to 4" lines can be equipped

Uses: Removal of iron fines and tramp iron from liquid material in pipelines.

Features: Permanent magnets in traps divert, but do not restrict, material flow. Traps are made in a range of materials, finishes, and strengths adaptable to various operating conditions and problems.

Description: Magnetic pipeline traps are available in two models. Model B is made in 316 stainless, and both high polished sanitary units and machine finished standard models. It is available for 2, 3 or 4" pipelines.



Exterior view of Model B trap which is made in 316 stainless with sanitary or standard finish

Model L is designed for less exacting work where primary requirement is for tramp iron separation. It is adaptable to pipelines from ½ to 2". Model L is made in bronze and contains one fully-encased magnetic element.

Both models are cleaned simply and easily and can operate at pressures up to 150 psi.

(Ferrotrap magnetic pipeline traps are products of Eriez Manufacturing Company, Dept. CP, Erie 6, Pa. . . . or for more information check CP 2063 opposite last page.)

For more information on product at right, specify CP 2064
. . . see information request blank opposite last page.



Only Childers Jacketing Offers LAP-SEAL

LAP-SFAL is a series of eight ribs rolled into the underlapping edge of the jacketing.

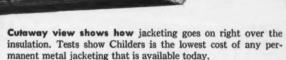
LAP-SEAL makes more positive weather seal.

LAP-SFAL saves labor—2" ribbed edge eliminates measuring for circumferential lap.

LAP-SEAL (patent applied for) is an exclusive "plus" available on all Childers Jacketing at no extra cost.



New method of applying aluminum jacketing over pipe bends with a radius of 5 diameters or more is shown above.



Only pliers and pocket knife needed to apply easy-to-handle Childers Aluminum Jacketing



Best method of applying jacketing is with aluminum strapping and seals. Other method is to use sheet metal screws.



Aluminum strapping can be pulled tight enough with just pliers. Lugs are then bent over and fastening is complete.

Eastern States Petroleum's two-man crew covers insulated lines, even L's and bends—using light-weight, weatherproof aluminum jacket.

Childers Jacketing for insulated lines, made of .006" 3S alloy aluminum, was used to cover thousands of feet of line in Eastern States Petroleum's Houston plant.

As it does in over 1000 other plants in all 48 states and many foreign countries, Childers Jacketing helped save Eastern States many expensive hours of application and maintenance time.

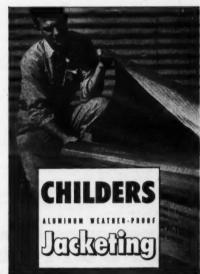
In fact, tests show this: Two men, working with Childers Jacketing for the first time, can cover more feet of insulated line in a day than with practically any other kind of covering. This means real savings in application costs.

The cost is low, too. You can actually put aluminum jacketing on your lines for less than the cost of the cheapest weatherproofing when one paint job is considered.

Immediate shipment from our large factory stocks can eliminate costly delays in construction or plant improvement schedules.

Try this low cost protection in your plant. Write today for engineering data and information about how you can order a 400 sq. ft. roll to test on one of your insulated lines. No obligation. Address: Childers Manufacturing Company, Department LP-12, 3620 West 11th Street, Houston, Texas.

Engineering representatives in most cities to work with you on jacketing problems.



Childers Jacketing arrives on the job in convenient rolls 4 feet wide and 100 feet long—easy for one man to handle. Jacketing comes with or without a moisture barrier attached to the back of the .006° aluminum. Rolls are well protected for field storage if kept dry. Boxes light enough for one man to carry. (Adv.)

IN CORROSIVE **ATMOSPHERES**



NEOPRENE W

Gives 3 Mils per Coat







For an easy-to-apply, all-purpose maintenance coating, Neoprene W gives you 3 mils of tough, exceptionally abrasion-resistant vulcanized rubber. Its resistance to light spillage, splash and fumes of acids and alkalis assures excellent protection for . . .

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When inquiring check CP 2065 opposite last page

ENGINEERING

Advantages of machine plastering outlined

How machine application of vermiculite plaster and acoustical plastic breaks bottleneck in industrial building is explained in four-page folder. Advantages of using the machine include greater speed, economy, versatility, fire-safety, sound-conditioning, and insurance savings.

Folder No. PA-29 is issued by Zonolite Co., Dept. CP, 135 S. LaSalle St., Chicago 3, Ill. When inquiring check CP 2066 on form opposite last page.

Portable dust collector combines centrifugal and filter action

Dust control in small Hees. installations or on isolated machines.

Features: Collector extracts dust and other particles from air by a combination centrifugal separation and filtration.



Collector has drawer at base where heavier particles are deposited for quick disposal

Description: Centrifugal action minimizes dust load transmitted to filters, adding to length of serviceability. Filter is standard throwaway type. Unit has drawer at base



Capacities 150 G.P.M.



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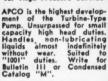
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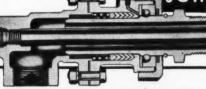
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AURORA® PUMP DIVISION THE NEW YORK AIR BRAKE COMPANY 62 LOUCKS STREET * AURORA · ILLINOIS

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better temperature control . . . less maintenance

The Improved REVOLVING THIOL SEE



ERE is Barco's improved Type IBR Revolving Joint or supplying steam, water, oil, or other fluids to rolls, dryers, drums.

LOW TORQUE! Inherent low torque is little affected by pressure, speed or temperature-thanks to special ball bearing used in combination with self-lubricating graphitecarbon bearing and new low torque V-ring seals.

LEAKPROOF AND LONG LIFE! Note wide spacing between bearings. Insures close alignment and long life for self-adjusting, self-sealing packing.

EASY SERVICING! Internal parts readily accessible—usually without removing joint from roll. Sizes ½ to 2°. Single flow or syphon styles. Steam: 150 p.s.i., 450°F., 500 RPM. Hydraulic: 200 p.s.i., 750 RPM.

Send for Bulletin 300 BARCO MANUFACTURING CO. 537M Hough Street, Barrington, Illinois

When inquiring check CP 2068 opposite last page

CHEMICAL PROCESSING

ENGINEERING

where heavier particles are deposited for quick disposal. Collector is available in sizes from 400 to 1000 cfm.

(Dust-Pak is a product of Schmieg Industries Inc., Dept. CP, PO Box 4701, Detroit 34, Mich. . . . or for more information check CP 2069 on form which is located opposite last page.)

Grease gun develops 2500 lbs pressure, holds 21 ozs...

companion filler pump delivers one pound in 30 seconds

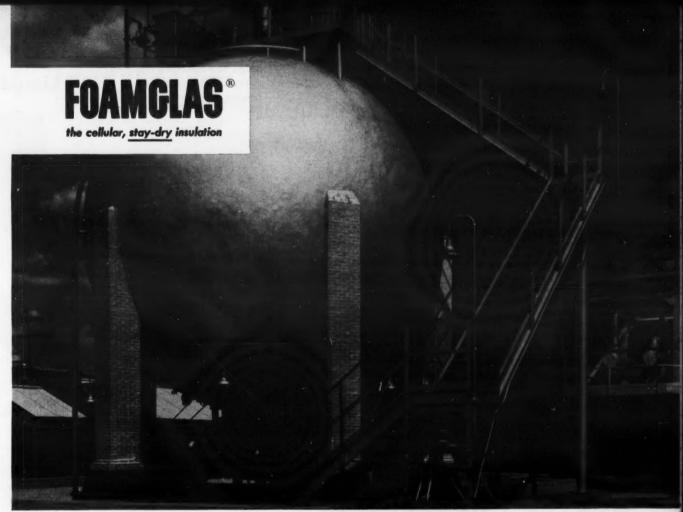
Super-volume, lever grease gun develops 2500 lbs maximum pressure

and is designed for servicing bearings requiring large quantities of lubricant. Unit holds 21 ozs and delivers 0.17 oz per stroke using No. 1 cup grease at 70°F. Gun may be spring or force primed and fitted with rigid hydraulic coupler extension or flexible whip hose with button head coupler. It is all steel construction, rust-

proofed, and finished in metallic gun-metal blue.

Companion filler pump attaches to any 25 lb to 50 lb original refinery lubricant container by means of three thumb screws. Manufacturer states it will fill a one pound capacity grease gun in 30 seconds while completely eliminating contamination, air-pockets, and mess of handfilling methods. Follower plate assures positive prime in any weather and completely empties lubricant container. Pump is of steel construction for long service life.

(Grease gun and filler pump are products of Lincoln Engineering Co., Dept. CP, 5780 Natural Bridge Ave., St. Louis 20, Mo. . . . or for more information check CP 2070 on form which is located opposite last page.)



Insulation Contractor: Combustion Equipment & Insulation Co., Cleveland, Ohio

SOHIO gets efficient desalting because . . .

Spillage-proof FOAMGLAS insulation stays effective to hold precise temperature

Efficient electric desalting to remove salts and other impurities from crude charging stocks demands precise temperature control throughout the process. The influent temperature (180° F to 220° F depending on viscosity of crude) must be held constant until effluence. Since there's no exchange of heat inside the sphere, it must be insulated very effectively.

For six years Standard Oil Company (Ohio) has maintained peak desalting efficiency by insulating their spheres in Cleveland, Lima and Toledo with FOAMGLAS. This unique cellular glass insulation benefits SOHIO three ways:

- 1. Spillage-proof, moisture-proof FOAMGLAS retains its insulating value . . . avoids fire hazard.
- 2. Easy-to-apply FOAMGLAS blocks are lightweight but very strong, readily

applied to sphere, eliminating insulation supports.

3. Effective insulation holds temperature required for electric field to break continuously the water and oil emulsion. It also prevents temperature drop near vessel wall . . . avoids thermal currents which would interfere with process.

You'll benefit too by using this unique insulation. For more facts please write for booklets on FOAMGLAS for piping or tanks and equipment.

Pittsburgh Corning Corporation

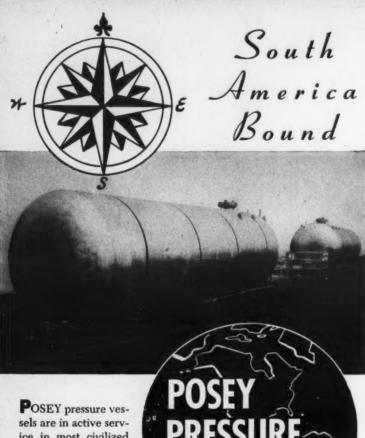
Dept. CP-115, One Gateway Center Pittsburgh 22, Pennsylvania In Canada: 57 Bloor St. W., Toronto, Ontario

Visit our booth at the CHEMICAL SHOW, Philadelphia, December 5th to 9th

When inquiring check CP 2071 opposite last page

2" thick FOAMGLAS blocks cut to 12 x 12 size were laid diamond shape on SOHIO'S desafter sphere in Toledo. Two Nelson studs were welded through each block and secured with recessed Tinnerman speed clips. After asphalt cutback (Insulmastic 4010)—glass fabric—cutback application, the surface was finished with an asphalt base aluminum paint.





ice in most civilized parts of the globe. These twin tanks were designed for propane storage for a South American industry. Fabricated from 1" steel plate, each tank

is 34' long and 10' in diameter, and operates at pressures up to 250 lbs. per square inch.

Posey Iron has over 45 years experience in the design, fabrication and erection of pressure vessels . . . large and small sizes . . in steel and alloy steels . . for both liquids and gases. All equipment is tested to considerable excess over normal working pressures. All standard codes are met, including ASME and

Let Posey Iron quote on your next pressure vessel job. Prices and specifications furnished upon request without obligation.

Elevated Tanks · Horizontal Tanks · Stacks Pressure Vessels · Digesters Carbon Steel and Alloy Steel Plate Fabrication **Dredge Pipe and Accessories**

POSEY IRON WORKS, INC.

Steel Plate Division LANCASTER, PA

Established Since 1910

When inquiring check CP 2072 opposite last page

ENGINEERING

High temperature handled with out-of-air-stream motor mounting . . .

fan also satisfactory for moving corrosive fumes

Uses: High temperature jobs such as oven, oil- and gas-fired induced-draft boilers or for moving corrosive fumes.

Features: Direct connected fan has motor mounted in a tunnel completely out of air stream.

Standard mode! Description: will operate to 300°F provided motor tunnel temperature does not



Tunnel mounted motor on fan is out of air stream

exceed 95°F. High-temperature, heavy-duty model with insulated motor chamber operates to 450°F. Special stainless steel or Monel propeller permits maximum temperature of 550°F. Fans are available in 25, 29, and 37" diameters.

(Model HN and HXN Fans are products of Hartzell Propeller Fan Co., Dept. CP, Piqua, Ohio. Check CP 2073 opposite last page.)

V-belt applications illustrated

Twenty-four page, three-color catalog details construction, specifications, and applications on complete line of V-belts. Photos depict variety of installations. Catalog V-55 is issued by Maurey Manufacturing Corp., Dept. CP, 2907-23 South Wabash Ave., Chicago 16, Ill. Specify CP 2074 on form opposite last page.

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WITHOUT CORROSION OR CONTAMINATION Wavelike Motion of

Steel Fingers Forces **Material Through Tubing**

Write for Catalog

Prices range from\$55 to

depending on size of pump and \$500 accessory equipment required.

When inquiring check CP 2075 opposite last page

PROPELLERS

for MIXING, STIRRING AERATING, PUMPING, etc.

Manufactured by an exclusive process, MICHIGAN propellers are perfectly balanced to avoid whip and strain on shafts. And because of their superior functioning are now standard parts of the products of many leading equipment manufacturers.

Available for special application and replacement, as well as original equipment, in a wide variety of metals and in sizes up to 60". Write for latest data folder.



When inquiring check CP 2076 opposite last page

CHEMICAL PROCESSING

Meet the need for handling nitrogen solutions safely and economically

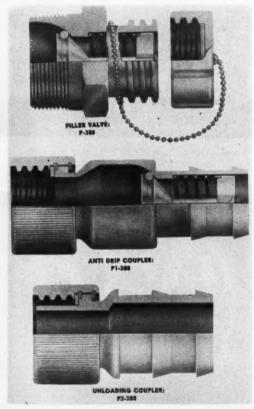
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Uses: Couplers for handling nitrogen solutions.

Features: Couplings provide efficient method of transfer to allow high speed filling of tanks from top or bottom. Solutions can be transferred and maintained under pressure, loss of ammonia vapor is prevented and problem of vapor lock in suction side of pump is eliminated.

Description: Coupler arrangement consists of a filler valve that is threaded into tank and a coupler for quick connection between hose and filler valve. Filler valve incorporates a check valve unit to permit flow into tank and automatically shut off dead



Coupler arrangement consists of filler valve threaded into tank and coupler for quick connection between hose and filler valve

tight when coupler is disconnected. One type is available with an anti-drip valve to prevent dripping from hose when disconnection is made. Alternate type is designed to open valve unit in filler valve to permit draining or reverse flow. They have acme threads. Couplers are constructed of anodized aluminum, will not leak ammonia vapor, pressured gas. (Circle Seal Couplers are products of James-Pond-Clark, Dept. CP, 2181 E. Foothill Blvd., Pasadena 8, Calif. . . . or check CP 2077 opposite last page.)

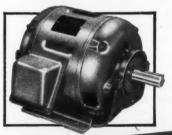


The Wagner line of polyphase, drip-proof general purpose motors—rerated to the new NEMA Standards—pack more power into smaller frames, but give you the same high Wagner Quality and long life performance that have made Wagner Motors "the choice of leaders in industry" for many, many years. These new Wagner Motors are fully protected in the ball bearing models. Their construction makes them completely drip-proof—and virtually splash-proof. The extra large, diagonally split conduit box makes wiring easy. Smaller size

and lighter weight means more economical handling and installation.

These new rerated Wagner Motors retain the features desired by plant engineers and maintenance men. They will operate for years without regreasing. But... when lubrication is necessary or desirable, you can lubricate these motors because they are provided with two lubrication openings.

Bulletin MU-202 gives full information—write for your copy today.



AVAILABLE WITH RESILIENT MOUNTING —SLEEVE BEARINGS UP THROUGH 5 HP.

These Wagner standard motors, in ratings up through 5 horsepower, can be used for specialized applications because they are available in sleeve bearing models with endplates that will take resilient mounts.

You can look to Wagner for a complete line of standard motors for specialized applications. The wide range of types and sizes permit the selection of a standard motor for almost any need.



Wasner Electric Corporation
6359 Plymouth Ave., St. Louis 14, Mo., U.S.A.

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

M55-6

ELECTRIC MOTORS . TRANSFORMERS . INDUSTRIAL BRAKES . AUTOMOTIVE BRAKE SYSTEMS-AIR AND HYDRAULIC

When inquiring check CP 2078 opposite last page

G



Service in working pressures to 300 p.s.i.g. is offered by the new VAREC Figure 2500C Automatic Tank Gauge. It's a high pressure model of the successful VAREC Figure 2500 Series, equipped with the Neg'ator motor, which eliminates use of counterweight and simplifies installation. This series has been tested by 3 years of service in the Petroleum and Chemical fields, after 2 years of experimental and development work.

An important part of this new model is the magnetic drive, which requires no packing gland or mechanical seal on rotating shaft. The use of stainless steel ball bearing construction throughout provides a combination that reduces friction to a minimum.

Liquid level indication on a mechanical counter and dial for convenient, easy reading. Components are enclosed in a separate compartment to keep tank vapors from fogging dial. Operation checker is standard equipment.

All the field-tested, desirable features of the VAREC Figure
2500 Series have been incorporated in this
new gauge for high pressure service

Varec

961-9

VAPOR RECOVERY SYSTEMS COMPANY

- the Figure 2500C.

2820 North Alameda Street Compton 1, California

Cable address: VAREC COMPTON Calif. (U.S.A.) All Codes

When inquiring check CP 2079 opposite last page

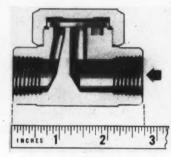
ENGINEERING

Kinetic energy of steam used to operate steam trap . . .

stainless steel construction reduces maintenance

Uses: Steam trap installations from 10 to 600 psi on light or heavy loads.

Features: Trap does not use a valve closing mechanism or gaskets. Single moving part, a stainless steel disc, operates on thermodynamic energy of steam.



Compact trap operates on kinetic energy of steam

Description: Three part trap is machined from stainless steel bar stock and resists both internal and external corrosion. Trap will operate against back pressures' up to 50% of inlet pressure.

(Type TD-50 steam trap is a product of Sarco Co., Inc., Dept. CP, Empire State Building, New York 1, N. Y. . . . or for more information check CP 2080 on form opposite last page.)

Expansion joints, surge limiters

Bellows-type expansion joints and pressurized surge limiters, called Hydropads, are subject of 36-page catalog. Details of construction, specs, and general application data are given. Sixteen tables, numerous drawings, and graphs, accompany the text.

Cat No. 52 is issued by Cook Electric Co., Dept. CP, 2700 N. Southport Ave., Chicago 14, Ill. Check CP 2081 opp. last page.



When inquiring check CP 2082 opposite last page

15655 BROOKPARK ROAD . CLEVELAND 11, OHIO

REPUBLIC MANUFACTURING CO



When inquiring check CP 2083 opposite last page

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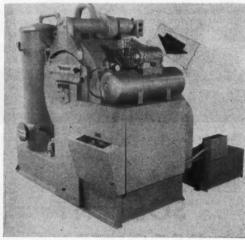
Portable and low in cost, compressor delivers oil-free air . . .

graphite piston rings eliminate need for separators or filters on air discharge line

Uses: Delivery of compressed air for industrial duties, particularly pneumatic tools and control systems.

Features: Air compressor units are lightweight and relatively low in cost. They provide air, up to 175 psi, completely oil-free.

Description: Compressor has piston made from graphite or carbon eliminating the need for oil lubrication. Oil separators or filters are not needed



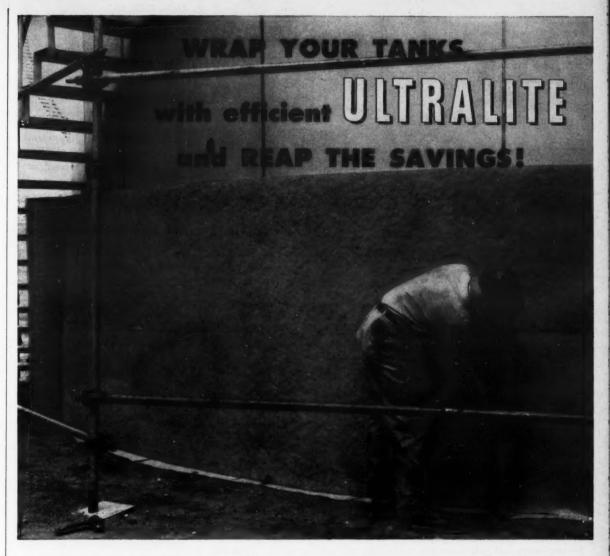
Installation of air compressor and tank (arrow) on dry cleaning machine

on air discharge lines. Motor and compressor are direct-coupled and each cylinder is equipped with safety overload valve. Units are rated for continuous operation at 35, 75, and 175 psi and from 1/4 to 3/4 hp.

(Oilless air compressors are a product of Bell and Gossett Co., Dept. CP, Morton Grove, Ill. . . . or for more information reader may simply check CP 2084 on the Reader Service slip which is located opposite last page.)

Your guide to more ideas concerning Engineering and Maintenance . . .

is the Product Directory on pages 237 to 240. All products and services discussed in this issue, in either editorial or advertising, are listed there — in alphabetical order for your convenience.



Quick as a flash, lightweight rolls of Ultralite glass fiber insulation can be run around tanks, vats and vessels — and that's more than half the battle in your war on insulating costs. The wider the roll, the quicker the job is done, and Ultralite is available in rolls up to 10 feet wide!

Consider the advantages of this New Way vs. the Old Way on a tank of about 4,000 sq. ft., like the one pictured. To do the job with Ultralite required just 4½ rolls, 150′ long and in this case, 6′ wide. One man can easily carry such a roll. One man can easily apply Ultralite. But, if you were to use individual insulation bats, 24″ x 96″, you'd need 250 bats . . .

and how many men would you say? And while you're figuring the saving, don't forget that you need twice as many welded mounting clips to apply bats as you do to apply Ultralite blankets.

Versatile and efficient Ultralite has other advantages, too, as insulation for all types of large heated equipment. It's resilient — not rigid — so that it can't crack under normal expansion and contraction. Its superior thermal efficiency means substantial heat savings over the years, and of course, Ultralite is as permanent as glass itself.

Next time, use Ultralite. It figures.

WRITE TODAY FOR "HOW-TO-DO-IT" DETAILS AND SPECIFICATIONS



Thermal and acoustical glass fiber insulations • Pipe couplings and fittings • Molded glass fiber pipe insulation
254 W. 10th St., Kansas City, Mo.

When inquiring check CP 2085 opposite last page



for Easier Cleaning!

• R-P&C clip gates were developed specially for those applications in the chemical and petroleum industries where ease of cleaning is a big factor. With these rugged valves you simply remove two nuts, then lift up the bonnet, stem and gate assembly in one piece for easy access to the entire valve body.

Ease of maintenance and sturdy construction make these clip gates preferable over bronze gate valves in many applications. Rated for 150 lbs. steam, or 225 lbs. owg, clip gates are furnished in sizes from ¼" to 3",

with screwed ends. Normally furnished with bronze trim, they may also be supplied in all-iron for use with fluids which attack bronze.

> All castings used are of close-grain, hi-test gray iron, 50% stronger than ordinary iron, from R-P&C's own foundry. Their construction embodies quality features that are characteristic of R-P&C's complete line of gate, globe, angle and check valves in all of the standard valve materials.

See your R-P&C Distributor or write for catalog



FREE SLIDE RULE

Valve selector slide rule

gives all dimensions for iron body and steel

valves in pressure class-es from 150 to 1500 lbs. Write for yours.

R-P&C Valve Division AMERICAN CHAIN & CABLE

Reading, Pa., Atlanta, Boston, Chicago, Denver, Detroit, Houston, New York, Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

R-P&C valves

When inquiring check CP 2086 opposite last page

ENGINEERING

Reduced speed fluctuation, fast accurate braking in loom operation . . .

clutch-brake loom motor has low maintenance cost

Loom operation and other industrial applications.

Rotor is pressed onto Features: heavy flywheel to provide inertia for smooth uniform loom operation. Clutch automatically disengages from flywheel and rotor when thread breaks to allow brake to bring machine to quick stop.



Heavy flywheel rotor combination provides smooth operation

Description: Insulation of clutchbrake motor is polyester film, which minimizes burn-outs. Motor stator assembly is coated with silicone to give added protection against moisture damage. Leads coated with neoprene will not wick moisture into vital electrical parts.

(Clutch-brake loom motor is a product of Small Integral Motor Dept. of General Electric Co., Dept. CP, Schenectady 5, N. Y. Check CP 2087 opp. last page.)

Collector handles wide variety of dusts

Centrifugal wet dust collector controls flammable, abrasive, corrosive, and obnoxious dusts. Four-page, two-color bulletin outlines specifications, and construction with photos, tables, and line drawings. Bulletin 919 is issued by Pangborn Corp., Dept. CP, Hagerstown, Md. When inquiring specify CP 2088 opposite last page,

TRY DARCOVA **PUMCUPS**

FOR

- · Higher pump efficiency
- · Lower pump maintenance

T'S a fact that hundreds of reciprocating pump and cylinder users today are standardizing on Darcova Pumcups because they elimi-nate fluid slippage, costly down-time and maintenance!

It's easy to check these claims right in your own plant. Be-hind this exceptional Darcova Pumcup performance lies texture-engineering and cup design that conform precisely to pressure-temperature-fluid conditions.



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Pumcups of various types are available in a complete range of sizes and texture-engineered compositions for your reciprocating pump and cylinder requirements,

Why not get all the facts? Send today for Pumcup Bulletin No. 5503.



When inquiring check CP 2089 opposite last page

You're Paying For

SOLVENT RECOVERY.

Why Not Have It?

In our 36 years of experience with Solvent Recovery, this basic fact stands out—the man who needs a recovery system has been paying for it for a long time.

If you evaporate solvents in your business, a Barnebey-Cheney Automatic Solvent Recovery System offers a tremendous savings potential. Solvents worth as much as \$1.50 per gallon can be recovered again and again for re-use for only 2c per gallon.

Barnebey-Cheney's advanced engineering service is available to survey your requirements, design and build a solvent recover system to fit your exact needs. Send for free bulletin 821-53.

VISIT US AT THE "CHEM SHOW," BOOTH 17.



In Canada: BARNEBEY-CHENEY LTD., St. Johns, Quebec

When inquiring check CP 2090 opposite last page

CHEMICAL PROCESSING

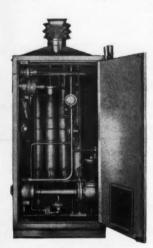
Self-contained LP-gas plants require no outside source of power . . .

packaged vaporizer-mixers designed to operate at pressures from one to five pounds

Uses: Mixing butane or propane with air to produce gas of predetermined Btu content.

Features: Fully-automatic unit is self-contained and requires no outside source of power when operating at pressures from 1 to 5 lb. Majority of installations can be made outside. All vital parts are enclosed in a steel case providing protection from weather.

Description: Vaporizer-mixers are available in



Packaged LP-gas vaporizermixer has all vital parts enclosed in steel case

capacities ranging from 1000 to 50,000 cfh. Units are directfired and use venturi tube principle of operation. Instant service is provided by means of pilot light that burns continually. No warming up period is required. Venturi mixing device protects against explosive mixtures. Company also manufactures individual vaporizers and mixers. Former are available in sizes from 40 to 800 gph and latter from 1000 to 50,000 cu ft per hr.

(Packaged vaporizer-mixers are product of American Liquid Gas Corporation, Dept. CP, 1109 Santa Fe Avenue, Los Angeles 21, California . . . or for more information check CP 2091 on form opposite last page.)

Uniformly cured rubber sheet packing covered

Increased serviceability and smoother finish of uniformly cured rubber sheet packing is covered in four-page, two-color pamphlet. Specifications and physical characteristics are given for cloth finish sheeting, all rubber sheeting, diaphragm sheet, and oil and solvent resistant sheet packing.

"Rubber Sheet Packing" is issued by Dept. 4201E Boston Woven Hose and Rubber Co., Dept. CP, PO Box 1071, Boston 3, Mass. When inquiring specify CP 2092 on form opposite last page.

ALUNDUM*

High-Purity Fused Alumina

How can you use it to advantage?

Among the many electrochemically refined materials produced by Norton Company, ALUNDUM fused alpha alumina is one of the most widely useful to industry. Thanks to its inherent properties of hardness, chemical stability and high density, engineers in various fields are finding many new applications for it.

Norton fused alumina is produced in a number of forms. Of these, 38 ALUNDUM* grain has proved particularly successful in applications demanding high purity. Electrically fused from Bayer-processed alumina, this

white grain is shown by typical chemical analysis to be 99.49% pure Al₂O₃. It is insoluble in common solvents and extremely resistant to reduction. It is an amphoteric refractory and has high dielectric strength. Other characteristics include:

Typical Product Applications in which Norton high-purity fused alumina is now working out to advantage are:

For Catalytic Reactions. Norton fused alpha alumina carriers are outstanding for chemical stability and resistance to abrasion and erosion. Available in the form of spheres, rings and pellets they are used both in fixed bed oxidation reactions and as inert, low-density carriers for space filler applications where a low surface area (less than Im²/gm) is required. Other types of ALUNDUM catalyst carriers having surface areas in the range 5-60 m²/gm are also available.

In Pebble Heaters. ALUNDUM heat exchange pebbles are giving excellent results in pebble heaters for heating gases above operating temperatures permissible in conventional tube furnaces. Their great resistance to abrasion, impact and repeated heating and cooling make them the ideal heat transfer medium in these devices. Also, their high refractoriness prevents them from the softening and "bridging" together that causes stoppages in the heater's moving bed.

In Thermal Cracking Reactors. Patticularly in Wulff Process Generators for cracking light hydrocarbons to produce acetylene gas and Koppers-Hasche Generators for cracking light hydrocarbons to produce a variety of gases and petrochemicals — checkers made of Norton ALUNDUM high-purity fused alumina provide definite advantages. Their excellent heat transfer properties, high refractoriness and resistance to erosion caused by hot gases are important Their ability to withstand the thermal stresses of intermittent operation assures long life. And their purity prevents side reactions with the reacting gases, thus safeguarding product quality.

In Gas Synthesis Generators. ALUNDUM fired shapes are ideal for lining generators of this type. Among the inherent characteristics of Norton high-purity fused alumina that work out very well are: high refractoriness, chemical stability, and inertness that prevents reacting with the contacting atmospheres.

Very many other uses for Norton high-purity fused alumina materials include: pure oxides and sintered refractories, refractory cements, wear-resistant parts, laboratory ware, coatings for rocket and jet plane parts and atomic energy equipment.

Other Norton Electrochemically Refined Materials

include CRYSTOLON* silicon carbide, MAGNORITE* magnesium oxide, NORBIDE* boron carbide, FUSED ZIRCONIA and many others, including a number still under development. These high-melting materials, which have varied applications in

many fields, are also the basic ingredients of the famous Norton Refractory R's — refractories engineered and prescribed for the widest range of uses.

For Your Own Applications Or Developments

Norton Company not only supplies these materials in crude form, but has extensive facilities for processing and fabricating — and is ready to work with you in engineering materials to your particular requirements. A new booklet "Norton Refractory Grain — Electrochemically Refined" contains detailed information. For your copy, write to

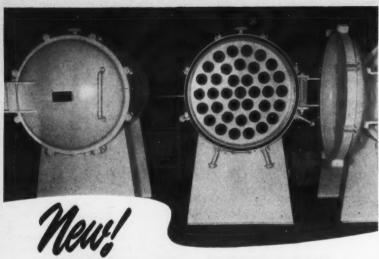
NORTON COMPANY, Refractories Division, 570 New Bond Street, Worcester 6, Massachusetts.



to make your products better

*Trade-Marks Reg. U. S. Pat. Off. and Foreign Countries

When inquiring check CP 2093 opposite last page



TUBULAR FILTERS by Industrial

WITH IMPORTANT NEW FEATURES DUE TO FLOW FROM INSIDE OF TUBE

- * Unequaled simplicity of maintenance.
- * Solids can be recovered in dry form.
- * Liners are easy to replace and inexpensive.
- * Ideal for intermittent or continuous operation.
- * Chamber can be emptled without losing cake.
- * No unfiltered "heel".
- * Can be used with or without pre-coat.
- ★ Ideal for polishing . . . as a trap filter . . . and as a scavenger for larger filters.

NEW SIMPLIFIED OPERATION

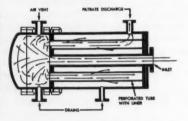
The filter is prepared for use by simply rolling flat sheets of filter paper and inserting them in the tubes, which are designed to force the paper snugly against the tube wall.

EASY TO CLEAN

Filter papers are simply withdrawn and replaced. Even the tubes are easy to remove, being held in place by a simple rubber O-Ring device. Except for the cover there are no nuts and bolts to handle.

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FLOW DIAGRAM



FOR FULL DETAILS WRITE FOR BULLETIN TS-160-755.



When inquiring check CP 2094 opposite last page

ENGINEERING

Allows one man operation of 10, 12, and 14" valves with torque reducer

Planetary gear torque reducer provides a 5 to 1 mechanical advantage allowing one man to operate 10, 12, and 14" diaphragm valves. Gear assembly is mounted at top of bonnet and increases overall height of valve 7½". Torque reducer is available on new valves or may be applied to valves already in service.



Gear assembly is mounted at top of valve bonnet

(Torque reducer is a product of Hills-McCanna Co., Dept. CP, 3025 N. Western Ave., Chicago 18, Illinois . . . or for more information check CP 2095 on form opposite last page.)

Pictures pump motors

Vertical hollow shaft motors developed especially for driving heavy-duty turbine pumps are described in four-page bulletin. Action drawings explain the operation of a recently developed ball-type non-reverse ratchet that prevents destructive backspin.

Bul on vertical hollow shaft pump motors is issued by ACEC Electric Corp., Dept. CP, 40 E. 49th St., New York 17, N. Y. When inquiring specify CP 2096 on form which is located opposite last page.

NO MATTER WHAT YOUR LEAKING JOINT PROBLEMS ARE



Leak Lock clings in tough films that stretch rather than break

IT MAY PAY YOU
TO TRY LEAK LOCK
LIKE OTHER
MAINTENANCE MEN

HAVE DONE

For 5 years, Leak Lock has been surprising skeptical people who didn't expect to find a "barrier" for an "impossible-to-hold" material. They were surprised at the broad scope of its capabilities.

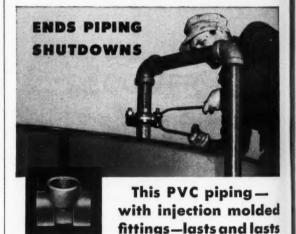
Leak Lock is being ordered regularly by a welldiversified list of important concerns who regard it as a "find" for special uses.

Send for information and a sample. And here's a tip: Don't depend on a lab. test. Try it on the actual job, and then you will know.



HIGHSIDE CHEMICALS COMPANY
A UNIT OF STEWART INDUSTRIES INC.
16 COLFAX AYENUE CLIFTON, N. J.

When inquiring check CP 2097 opposite last page



At this plant, unplasticized PVC piping handles sulfuric, nitric, muriatic, phosphoric, and acetic acids. Pressures range to 100 psi. This PVC piping, using Tube Turns Plastics' injection molded PVC fittings, has been in service for months, shows no signs of deterioration. Yet the metal and alloy metal piping it replaced failed at 3 to 12 months intervals from corrosive action. Cut your maintenance—eliminate shutdowns and hazards. Write for free booklet describing properties of unplasticized PVC fittings and flanges. Tube Turns Plastics, Inc., Dept. PA-11, 2929 Magazine Street, Louisville 11, Kentucky.



TUBE TURNS PLASTICS, INC.

Louisville 11, Kentucky

Call your TUBE TURNS PLASTICS' Distributor

When inquiring check CP 2098 opposite last page

CHEMICAL PROCESSING

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Cyclotherm Steam and Hot Water Generators 18 to 500 hp. 15 to 200 psi.

Cyclotherm Cyclonic Combustion achieves its high heat transfer rate in only 2 passes. Gives you 66% more steam generating power per sq. ft.! Fuel consumption varies withload requirements.



From cold start to full power takes only 15 to 20 minutes. Fuel changeover can be quickly made as fuel prices fluctuate.



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Cyclotherm Cyclonic Combustion simplifies maintenance... lowers costs as much as 50%. One man can clean return tubes and burner nozzle. You can devote more space to storage and production. Cyclo-1/3 smaller than other

therm is up to ½ smaller than other packaged units. Time-saving, economical installation requires 5 connections.

Write today for the free booklet which proves how Cyclotherm can produce steam at lower costs... in minimum space.



Cyclotherm Division National-U. S. Radiator Corp., 2924 E. First Street, Oswego, New York

When inquiring check CP 2099 opposite last page

heavy-duty diesel is capable of outputs up to 1400 hp at 1000 rpm

Uses: Engines are designed for service in utility

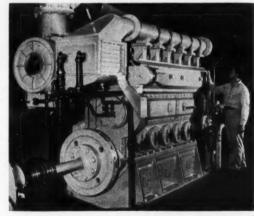
higher power output . . .

Cleaner, more complete combustion provides low fuel consumption,

Uses: Engines are designed for service in utility and water works, chemical and petroleum plants, sewage disposal plants, mobile power applications, and pump or blower drive.

Features: Air inlet has streamlined design which brings air in parallel to inlet valve stem, gives it a swirl as it enters cylinder. Feature allows ramming larger and more turbulent air charges into cylinder, giving cleaner and more complete combustion. Engine operates on low cost fuels: residual, crude, and distillate oils; natural, sewage, propane, or manufactured gas. Diesel may be arranged as a drive unit from either end, may be equipped with any of the standard clutches, hydraulic couplings, torque converters, or other power take-off equipment.

Description: Called the W9, 4-cycle, heavy-duty diesel dual fuel and gas engines are capable of outputs up to 1400 hp at 1000 rpm. Engine is structurally designed for operation at higher than 200 psi, bmep. Cylinder liners are of cast iron with water jackets



Design allows ramming large turbulent air charges into cylinder for cleaner, more efficient combustion

cast integrally. Crankshaft is hung from frame, secured by heavy cast steel main bearing caps, and utilizes removable precision bearing shells. Base serves to support engine and provide a means of mounting it on foundation, or on structural steel members. Base is also lube oil sump in stationary applications. Inspection doors and covers permit easy access. Bearings on main, crankpin, wrist pin, and cam shafts are oversized to reduce bearing pressures.

(Diesel engine is product of Worthington Corp., Dept. CP, Harrison & Worthington Ave., Harrison, N.J. . . . or for more information check CP 2100 on form opposite last page.)



Chemlon Yarn Style C-30 extra tough packing gives you two important advantages not provided by other types of braided or molded Teflon packing: 1) positive sealing efficiency at high peripheral speeds; 2) cooler running stuffing box under severe service conditions.

Style C-30 can be used to handle the most destructive acids, alkalis or solvents. The excellent thermal properties of Teflon, combined with the softness, resiliency and fluid retentive properties of fine fiber construction, adapt it to high temperature conditions to +300°F. The packing is made firm and dense by means of a special process which eliminates large voids.

HERE'S PERFORMANCE PROOF:—Fluid handled: 45% H₂SO₄ (impure) at 170° F.—Operating conditions: 1% " pump shaft at 1700 rpm. or 555 fpm. peripheral speed. Results: 46 days good service. Previous best service record 7 to 10 days.

Chemlon Yarn Packing Style C-30 is available in spool or coil form, in a wide range of sizes from ½" up. Can be lubricated with Teflon suspensoid or various types of lubricants.

Send for Bulletin No. P-321. Crane Packing Co., 1821 Cuyler Avenue, Chicago 13, Illinois. In Canada: Crane Packing Co., Ltd., 617 Parkdale Ave., N., Hamilton, Ont.



11 11 60 000

When inquiring check CP 2101 opposite last page



Look to FLINTKOTE ADHESIVES

for low-cost volume processing

Not only lower costs but better results are often possible in volume bonding, laminating, impregnating and similar operations.

When bulk-supplied Flintkote Industrial Adhesives are applied. For instance, in . . .

Rubber and Resin Latex Compounds

You get great versatility in various formulations of rubber and resin bases for use with papers and cloth materials. For adhering, flexibilizing, binding.

Reclaim Rubber Dispersions

Several high test, low cost, non-flammable water base adhesives offering wide range in viscosity, open and setting times. You can also use them to extend higher cost, new rubber latices for manufacturing economy.

Asphaltic Compounds

Emulsions and cutbacks for adhering, saturating or sizing many fibrous products: felts, insulation, fabrics, paper. You can obtain in-

ternal or external water resistance. Also asphalts compounded with rubber and asphalts for extending

Rubber-Resin Solvent Cements

Formulations for multi-purpose bonding of rubber, metal, wood, plastics, leather, glass, fabrics to themselves or one another. Designed for various application methods and systems.

Let's discuss the possibilities of these adhesives for your processing problems. Our 50 years specialized experience is always at your service. Ask for technical data sheets.

THE FLINTKOTE COMPANY Industrial Products Division, 30 Rockefeller Plaza, New York 20, N. Y.

BOSTON . CHICAGO HEIGHTS . DETROIT LOS ANGELES · NEW ORLEANS · PHILADELPHIA In Toronto, Ontario: The Flintkote Com-

pany of Canada, Ltd. In London, England: Industrial Asphalts Company, Ltd.

FLINTKOTE Products for Industry



When inquiring check CP 2102 opposite last page

engineering and maintenance



Vertical turbine pump at Humble is designed so a volatile fluid can be handled with a low suction head. Motor and shaft seal need not be submersed but remain high and dry

automatically separates from sewer

Economical explosion-proof vertical pump is in service at Humble's Baytown refinery

By GORDON WEYERMULLER, Associate Editor with H. M. STEWART, Engineering Associate Humble Oil & Refining Company, Baytown, Texas

Problem: Humble Oil & Refining Company, Baytown, Texas, required a method for separating paraxylene from waste water to keep that chemical from getting into the sewer system. The chemical effluent comes from company's 25 million lb per year paraxylene unit, product being sent to another company and used in making Dacron.

Solution: In May 1953, Humble placed Serial No. JF 4510 vertical turbine pump in operation. Waste material flows to small basin beneath pump, which then separates

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paraxylene effluent

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the mixture of paraxylene and oil from the water. Operation of pump is completely automatic. When level in basin builds up, float actuates motor, causing the lower specific gravity oil and water to be transferred to a tank for recovery. Remaining waste water goes to sewer.

Principal advantage of the pump for this type of operation is that the multi-stage assembly lowers suction head requirements. This permits a volatile fluid to be handled without installing the pump below the surface of the fluid. Motor and shaft seal remain high and dry and are easily accessible.

(Continued on page 173)



When inquiring check CP 2103 opposite last page

for IMPROVED PARTICLE SIZE REDUCTION...



NEW IMPACT-RESISTANT ROTOR and LINER!

abrasion-proof • corrosion resistant • chemically inert

The "Entoleter" Impact Mill now features a rotor and liner with highest abrasion-resistant ceramic material at points of impact . . . commercial applications prove outstanding wear and corrosion resistant character-Istics required for particle size reduction in the CHEMICAL INDUSTRY.

SEE "ENTOLETER" EXHIBIT BOOTH 703, CHEMICAL SHOW For further information concerning lower maintenance costs on particle size reduction or ingredient dispersion . . . fill in the coupon below: ______

Name	Title	
Company	Street	
City	Zone	State
ALL DESIGNATION OF THE PERSON	PROCESSED	
	sample of our product (5-25 lbs.) to your lai TOLETER" IMPACT MILL with the new rotor an	

The trademark "ENTOLETER" is

ENTOLETER DIVISION

The Safety Car Heating & Lighting Company, Inc. 1169 Dixwell Ave. New Haven 4. Connecticut

When inquiring check CP 2104 opposite last page

ENGINEERING & MAINTENANCE

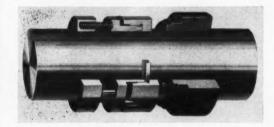
Mechanical seals withstand operating temperatures up to 800°F . . .

> they are simple in design, and can be installed easily on new or existing equipment

As a rotary mechanical seal for pumps handling liquids in the higher temperatures.

Seals hot oil or hot water at working temperatures up to 800°F. They are simple in design, and can be installed easily on new or existing equipment. Their construction allows for thermal expansion to insure efficient performance. The seals do not require stuffing box flushing, unless to control vapor pressure in the box, or to flush out excessive coke formation which might form at high temperatures.

Description: Dura Seal "Hot Seals" come in two adaptions: an unbalanced assembly Type RHU (illus-



trated), and a balanced assembly Type PHU. They are constructed generally of Type 316 Stainless Steel and have durable wearing faces. They are equipped with stainless steel U-ring shaft packings.

(Rotary mechanical seals for high-temp service are products of Durametallic Corp., Dept. CP, 2104 Factory St., Kalamazoo, Mich. . . . or for more information check CP 2105 opposite last page.)

Inverted bucket-type trap removes condensate quickly, cheaply . . .

it is not damaged by water-hammer impact For fast removal of condensate from higher pressure steam lines.

Steam trap is efficient, low cost. It is not subject to damage by start-up surges or impact from water hammer.

Description: Steam trap is of the inverted bucket type and is available with 1/2 or 3/4" vertical connections. It is equipped with Duo-Step leverage for maximum capacity.

(Model 7 CS steam trap is a product of The Clark Manufacturing Co., Dept. CP, 1830 E. 38th St., Cleveland 14, Ohio. Check CP 2106 opp. last page.)

Speed-Trols Aid Water Conditioning and Treatment

Accelators are engineered to permit precise adjustment for the many variations in water characteristics encountered in water conditioning and waste treatment . . . Speed-Trols play an important part in achieving this versatility ... as impurities, temperature, etc., change, recirculation of slurry is varied accordingly by accurate speed adjustment of the rotor-impeller. This operation requires the infinite speed adjustment and positive speed regulation of Speed-Trols, reports Lawrence K. Cecil, Vice President of INFILCO, Inc.

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STERLING SPEED-TROL



GIVES YOU VARIABLE SPEED CONTROL NECESSARY FOR:

Equipment adaptation to: Sequence synchronization — operators' abilities — load variations due to differences in quantity, quality, weight, size, tension, hardness or shape of material to be processed, machined, conveyed, blended, mixed, etc.

Process control of: Temperature - viscosity - level - pressure - flow - etc.

Time control of: Baking-drying-heating — cooking — pasteurizing — soaking — chemical action — etc.

With Speed-Trol you get the maximum in production, plant efficiency, quality & profit.

20-page illustrated catalog... Sterling Speed-Trol, Slo-Speed, Klosd and Klosd-Tite Electric Power Drives. Write for catalog

ELECTRIC MOTORS

Plants: New York City 51; Chicago 35; Los Angeles 22; Hamilton, Canada; Santiago, Chile Offices and distributors in all principal cities

When inquiring check CP 2107 opposite last page

CHEMICAL PROCESSING

Small, low cost swivel joint handles water, oil, and air at pressures to 300 psi . . .

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unit rotates through 360° with free action or controlled torque

Uses: Hose lines, where flexing and weaving are encountered, and liquid and air handling equipment of all kinds.

Features: Swivel joint is rated to handle air, oil, or water at pressures up to 300 psi and temperatures to 225°F. Available in ½ to ¾" internal pipe size,

Fisco swivel-e TE

Swivel joint is available in sizes of 1/2 and 3/4" internal

cost of unit replacement is less than cost of repairing other types of joints.

Description: Unit is available in two styles, one for free, easy turning and the other with a drag, or torque, controlled by simply turning Allen head screw which actuates an internal brake shoe. Joint is made to rotate through 360° and is intended for occasional or intermittent turning rather than continuous rotation.

(Swivel-ette joints are a product of Emsco Manufacturing Co., Dept. CP, PO Box 2098, Terminal Annex, Los Angeles 54, Calif. . . . or for more information check CP 2108 opposite last page.)

Lead replaces sulfur in free-cutting steel plate . . .

has improved machining and welding properties

Uses: Steel plate for easy machining, welding. Features: Plate has improved machinability, superior welding, polishing, and plating properties. Its flame cutting, forming, grinding, and case hardening characteristics are good.

Description: Lead-bearing steel plate is available from stock in thicknesses from ½ to 3" inclusive. Theory of lead addition is that lead acts as a lubricant to cutting tool, reducing friction, and requiring less cutting power. There is better chip formation with minimum tool-edge buildup. Output and tool life is increased.

(E-Z-Cut is a product of Joseph T. Ryerson & Son, Inc., Dept. CP, PO Box 8000-A, Chicago 80, Ill. . . . or check CP 2109 opposite last page.)



For longer life, a high capacity, low speed Watson-Stillman intensifier unit offers you a sound approach to the solution of the problems of packing and fatigue at pressures up to 100,000 p.s.i. Because of its slower piston speed, and resultant low rubbing velocity, packings last longer. Slower cycling speed reduces the number of stress reversals, increases fatigue life in high pressure cylinder and valve block. At this low

speed of operation, you can expect 10 to 12 times the life of comparable high speed equipment.

High pressure intensifier units are only one of the Watson-Stillman "Completeline" of hydraulic machines and equipment. It will pay you to get in touch with W-S first, when it comes to vertical and horizontal pumps and accumulators, too. All W-S equipment is economical—both in first cost and operating cost.



When inquiring check CP 2110 opposite last page



STRAINERS



SCREENS





FILTER LEAVES

Cambridge FAST, ACCURATE PRODUCTION OF WIRE CLOTH PARTS

FOR FABRICATED PARTS call your Cambridge Engineers in the field, or call our home office. We'll help you select weaves, mesh sizes and metals to meet your needs and draw up prints for your OK . . . or, work from your prints. On small or large orders, you're assured of strict adherence to specifications by close manufacturing supervision.

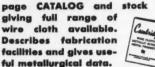
A COMPLETE LINE of industrial wire cloth is available from Cambridge . . . specifications from the finest to the coarsest mesh in any metal or alloy. Uniform mesh size and accurate mesh count are assured by individual loom operation and careful inspection.

IF YOU BUY WIRE CLOTH IN BULK

You can get IMMEDIATE DELIVERY on large or small orders for the most frequently used types of cloth. If your needs are not in stock, we'll schedule our looms to get your material to you without delay.

LET US QUOTE on your next order for fabricated parts or wire cloth in bulk. Call your Cambridge Field Engineer-he's listed under "Wire Cloth" in your classified telephone book.

OR, WRITE DIRECT for FREE 80page CATALOG and stock list giving full range of wire cloth available. Describes fabrication





The Cambridge Wire Cloth Co.

METAL CONVEYOR CLOTH BELTS

METAL FARRICATIONS DEPARTMENT F. CAMBRIDGE 11, MARYLAND

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

When inquiring check CP 2111 opposite last page

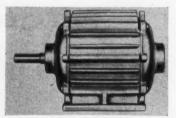
ENGINEERING

Sealed bearings allow years of motor usage without attention . . .

greater heat dissipating surface with integrally cast fins

Industrial and commercial fans, blowers, cooling towers, air conditioners, unit heaters, or other applications where a totallyenclosed, fan-duty motor is neces-

Features: Double-width prelubricated sealed ball bearings keep out abrasives, dirt, and moisture. Non-hardening grease sealed into bearings permits operation without attention. Integrally cast fins provide greater heat dissipating sur-



Fins provide greater heat dissipating surface

Description: Windings have double heavy polyvinyl acetate insulated wire. Motors are available with explosion-proof construction and optional connection boxes to fit any air-over-motor application. Ratings are from 3/4 to 20 hp.

(Type EFD totally enclosed fanduty motors are a product of Lima Electric Motor Co., Dept. CP, 202 Findlay Road, Lima, Ohio . . . or check CP 2112 opp. last page.)

Magnetic properties of cores

Four-page bulletin presents a number of charts in order to show the magnetic properties of Ferramic cores.

"Ferramic Magnetic Cores" is issued by General Ceramics Corp., Dept. CP, 25 Crow's Mill Rd., Keasbey, N.J. Specify CP 2113 opposite last page.



for condenser and heat exchanger tubes. Rotating, parallel self-feeding rolls insure uniform action and stronger joints. Rolls have radius on front and back ends to prevent any sharp offsets inside the tube. Made of the highest grade tool steel, properly heat treated. Bulletin Y-38 gives complete details. Write Elliott Company, Lagonda Div., Springfield, Ohio,

STEAM TURBINES . MOTORS . GENERATORS . DEAERATING HEATERS . EJECTORS - CONDENSERS - CENTRIFUGAL COMPRESSORS - TURBOCHARGERS - TUBE CLEANERS - STRAIMER

When inquiring check CP 2114 opposite last page

MORSE DeLUXE 500 **Portable** ROTATOR

MIXES

In sizes for tubes

1/2" through 11/2",

in four types.

- BLENDS
- TUMBLES
- CLEANSES



Faster and at less cost!

The patented Morse De Luxe 500 Rotator will handle I to 55 gal. containers, weighing to 500 lb. They revolve safely, smoothly, efficiently at 10, 20, 40 rpm on this powerful, compact, portable, motorized unit. Cuts cost of mixing, blending, tumbling, cleansing. Easily moved and loaded by one man. Has 3/4 dia, power driveshaft with self-aligning ball bearings. Four adjustable 4" dia. Neoprene-tread drive wheels. Fully enclosed worm-gear drive with 30-1, 15-1, 71/2-1 reductions. Weighs 137 lb. Delivered complete with motor, drive mechanism and tipping lever. Write motor, drive mechanism and tipping lever. Write for Bul. #1053 and catalog, showing full Morse line of Drum and Barrel handling equipment.

E *Manufacturing co.* Inc. 757 West Manlius St. East Syrocuse, N. Y

When inquiring check CP 2115 opposite last page

CHEMICAL PROCESSING

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VERTICAL TURBINE PUMP

(Continued from page 169)

Top portion of pump consists of 3 hp, 1760 rpm motor, with sealed shaft below. Column is water-lubricated. Bottom portion of unit consists of the 12-stage turbine bowl assembly. All equipment is explosion-proof.

Results: Pump installation has proved to be quite economical from a recovery standpoint. About 25 bbl of material per day, consisting of 80% oil and 20% paraxylene, is recovered by unit. Very little maintenance has been required on pump. (For more information on vertical turbine pumps check CP 2116 on form opposite last page.)

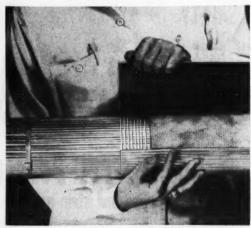
Completely waterproof seal for all outdoor insulation needs no maintenance . . .

aluminum jacketing is easy to install or remove

Uses: Weatherproofing all types of outdoor insulation.

Features: Design of jacketing gives completely waterproof seal. Aluminum construction needs no painting, will not rot, dry out, or rust.

Description: Jacketing is a series of eight ribs rolled into underlapping edge. Installation is easy, no special equipment is necessary and design eliminates waste by establishing necessary overlap at cir-



Jacketing can be easily installed

cumferential joints. Easily removed and reused when lines are moved or inspected, wrapping gives 100% recovery reducing replacement cost.

(Lap-Seal aluminum jacketing is a product of Childers Manufacturing Co., Dept. CP, 3620 W. 11th St., Houston 8, Texas . . . or for more information check CP 2117 on form opposite last page.)



When inquiring check CP 2118 opposite last page



CHECK these Eco All-Chem pump features against your needs:

- Capacities: 1-10 gpm at 1750 rpm, up to 150 psi.
- Metal housing: Type 20 or Type 316 stainless steels; Hastelloy C.
- Impellers, bearings, shaft seal: Teflon.
- Flow characteristics: linear non-surging, non-foaming, non-aerating ... lowest corrosion rate in pump and accessory piping.
- Positive displacement . . . high suction lift . . . self-priming with nonvolatile liquids . . . operates in either direction.
- Drives: Direct motor, V-belt or vari-speed pulley drive.
- Standard parts mass produced and stocked for immediate shipment and for complete interchangeability.
- Adaptable for constant volume transfer, for agitating and pumping shear-sensitive fluids under pressure, and for constant flow metering.
- Handles organic, inorganic, hazardous and radioactive fluids.
- Lowest price in its class . . . the most pump and pump performance for your money.

Write for Further Information Review your small pump prob-lems. See the Eco line at the Chemical Show — Booth 647

ENGINEERING COMPANY

12 NEW YORK AVE. . NEWARK 1, N. J.

When inquiring check CP 2119 opposite last page

ENGINEERING

Air and condensate rapidly removed by steam trap . . .

quick action gives fast heating, efficient operation

For air and condensate Uses: removal in low-pressure steam sys-

Features: Traps are quick acting, make possible fast heating and efficient operation at pressures up to 15 psi, and prevent trap and connecting piping from becoming air-bound. Traps are simple in construction and easy to maintain. All pipe connections are located on body, inlets and outlets are clearly marked. All internal working parts are attached to cover, making them accessible for cleaning, maintenance. Cover may be removed without disconnecting trap.



Steam trap is activated by both float and thermostat

Description: Float and thermostatic steam traps operate by an expanding thermal element and ball float mechanism. At low temp, thermal element is contracted, permitting unrestricted removal of air to outer side. As temp increases, thermal element expands, closing unit and sealing trap against escape of steam. Ball float mechanism is designed to keep outlet valve closed until condensate level reaches predetermined height. As condensate level continues to rise, ball floats upwards, outlet valve is opened, and condensate flows from trap.

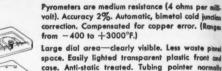
Body and cover of trap are of gray iron. Valve and seat, and spring fulcrum are stainless. Other parts are brass, float is copper plated. Traps are supplied in five standard



Electrical Indicating Panel Meters and **Pyrometers**

Model 261 shown, Price \$11.50

White-face, Black-face, or Colored Dials. Can be calibrated in any units (Amps. KV, FPM, Angstrom Units)



case. Anti-static treated. Tubing pointer normally supplied. Knife-edge and other types available D'Arsonval movement in Alnico permanent magnet Snap-fit construction, virtually dust-tight case. AC meters are rectifier type. Model 451 is 41/2"; Model 351 is 31/2"; Model 261 is 21/2". Meters with Zero Right, Zero Center or up to two-thirds of range sup pressed can be supplied.

AC and DC meters can be furnished in multiple ranges. Meter ranges: DC or AC 0/20 Microamps to 0/50 Amps. 0/5 Millivolts to 0/500 Volts. (Minimum AC Range 0/250 Millivolts). Panel meters and pyrometers with black Bakelite cases also available. Model 301



shown. Write for Bulletin G-9, Assembly Produ Inc., Chesterland 36, Ohio. Phone: (Cleveland, 0.) HAmilton 3-4436. Atomic Exposition, Booth 423, Dec. 10-16,

Other products: meter-relays, VHS relays, Simplytrol Controls (temperature), and Versatrol Controls (for any variable which can be meas-ured electrically.) Cleveland, Ohio

When inquiring check CP 2120 opposite last page

IMPORTANT SAFETY for your plant!



Slip-resistant

Tri-Lok and Tri-Forged Serrated grating and stair treads

Don't take chances in those plant areas where grease, oil or other conditions make floors slippery and dangerous! Play it safe with the non-skid, notched surface of Tri-Lok or Tri-Forged serrated grating and stair treads. Here is a walking surface that is hazard-proof and the ultimate in safety. To be sure you have complete information on all Tri-Lok and Tri-Forged products, write today.

For free catalog write Department D-2711

CORPORATION Pittsburgh 22, Penna. **National Distributors**

When inquiring check CP 2121 opposite last page

CHEMICAL PROCESSING

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sizes from 3/4 to 2". Capacities range from 70 to 5750 lb water/hr, depending on pressure differential and connecting pipe sizes.

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(F & T traps are products of Strong, Carlisle & Hammond Co., Dept. CP, 1392 W. 3rd St., Cleveland 13, Ohio . . . or for more information check CP 2122 on form opposite last page.)

Motor's ventilating fan gives efficient cooling in either direction . . .

totally-enclosed unit has rib type frame for easy cleaning

Areas where dirt, fumes, and mist could damage a conventional motor.

Features: Ventilating fan, cooling motor, can be operated in either direction with equal efficiency. Fan does not have to be changed when direction of operation is changed.



Motor is available in sizes from 1/2 to 100 hp

Description: Motor has rib-type, cast-iron frame for easy cleaning. Rotor is electronically balanced and all units meet NEMA requirements. Motor is available in seven sizes from 1/2 to 100 hp.

(Totally-enclosed fan cooled motor is a product of Century Electric Co., Dept. CP, 1806 Pine St., St. Louis, Mo. . . . or for more information check CP 2123 on form opposite last page.)

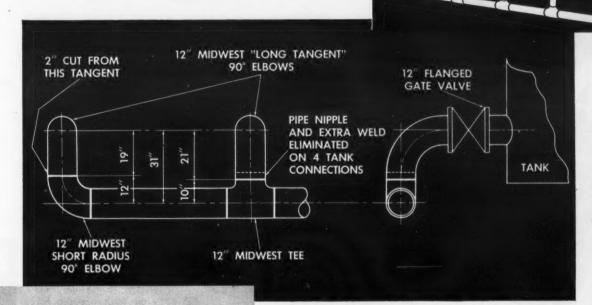
For more information on product at right, specify CP 2124 see information request blank opposite last page.



MIDWEST "LONG TANGENT" ELBOWS

SAVED \$15620

On This Welding Piping



WIDWEST "LONG TANGENT" BOWS COST NO MORE THAN OTHER ELBOWS



The Problem:

To connect the five tanks shown in the sketch at top to a common 12" header.

The Difficulty:

The center-to-outlet dimension of the 4-12" tees is only 10", while the shortest elbow available measures 12" center-to-end, Thus, if standard long radius elbows are used next to the five tank valves, four short nipples and four extra 12" welds would be required.

The Solution:

By using Midwest "Long Tangent" elbows as shown in the blueprint, the expense of the four extra nipples and welds was eliminated at the cost of just one cut! The actual net savings made by "Long Tangent" elbows on this job was \$156.20.

Remember-Midwest "Long Tangent" elbows cost no more than regular elbows! For further information, write for Catalog 54.

MIDWEST PIPING COMPANY, INC.

Main Office, 1450 South Second St., St. Louis 4, Missouri

PLANTS: ST. LOUIS, PASSAIC, and LOS ANGELES

SALES OFFICES: NEW YORK—50 CHURCH ST. • LOS ANGELES 33—520 ANDERSON ST.
BOSTON 27—426 FIRST ST. • CHICAGO 3—79 WEST MONROE ST.
CLEVELAND 14—616 ST. CLAIR AVE • HOUSTON 2—1213 CAPITOL AVE.
TULSA 3—224 WRIGHT BLDG. • MIAMI 34—2103 LEJEUNE ROAD



1001 USES for ACE-FLEX Tubing

Trouble-free plastic diaphragm valves . . . choice of general-purpose rubber-plastic Excellent chemical-resistant, all-purpose blend, Ace Parian (polyethylene) or Ace flexible plastic tubing. Sparkling clear, easy to clean, odorless, non-toxic, can be Saran. Handles most corrosive chemicals and food ingredients. Sizes 1/2" to 2", steam-sterilized. 3/8" to 1" ID. Bul. 66. 50 psi. at 77° F. Bulletins 80 and 351.

VALVES

176

for all-plastic piping systems

ACE rubber and plastic products AMERICAN HARD RUBBER COMPANY

93 WORTH STREET . NEW YORK 13, N. Y.

When inquiring check CP 2125 opposite last page

ENGINEERING

Temperatures to 700°F handled by plug valve

Specially-designed plug valve is expected to find use in petroleum refineries and allied industries where liquid fuel is burned at high temperatures (up to 700°F). No castings are used for pressure parts of these valves. All parts are machined from solid ingots. Body is steel and trim is stainless.



Plug valves are available in sizes of 3/8, 1/2, and 3/4".

(#9195 plug valve is a development of National Airoil Burner Company, Dept. CP, 1284 East Sedgley Ave., Philadelphia 34, Pa. . . . or for more information check CP 2126 on form opposite last page.)

Reduces resistance - and heating in switches . . .

electrically conductive lubricant prevents balling up and freezing

Electrically conductive lubricating compound reduces resistance and heating in conducting hinge joint and knife blade switches.

A combination of lubricant and silver, it prevents switches from balling up and freezing. Compound is particularly effective on highspeed air blast breakers where lubrication is essential.

(Conducto-lube is a product of Conducto-Lube Co., Dept. CP, 8603 S. W. 17th Ave., Portland 19, Oregon . . . or check CP 2127 opposite last page.)



for conditioning and control of compressed air

TRUE MIST LUBRICATOR

Pipeline Sizes:

1/4" - 3/8" 1/2" - 3/4"

1" and

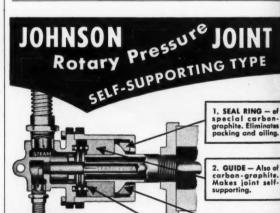
- 1. Automatic delivery of mist hubricant proportional to air flow at any adjustment.
- 2. Tamper-proof adjustment of all
- 3. Lubricates only when equipment is in operation.
- 4. Eliminates excessive or insufficient lubrication.

SEND FOR CATALOG AND LITERATURE

arrow tools, incorporated

1904 S. Kostner Ave., Chicago 23, III.

When inquiring check CP 2128 opposite last page



Only 4 Internal Parts

4. SPRING - For initial seating only. In operation joint is pressure sealed. 3. NIPPLE—Rotates with roll, seals against ring.

For introducing steam and liquids into rotating rolls and cylinders, there's nothing like the Johnson Joint above,
It's packless, self-lubricating, self-adjusting, self-supporting. It has been
adopted by dozens of machinery makers, and is finding

new uses every day.

Type SB shown handles both steam and condensate through same head; also available for through flow service, and in sizes and styles for all operating conditions. Write for literature.

The Johnson Corporation

826 Wood St., Three Rivers, Mich.

When inquiring check CP 2129 opposite last page

CHEMICAL PROCESSING

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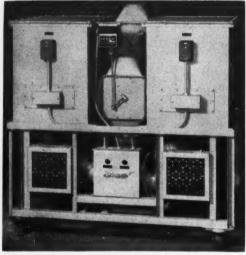
Maintains humidity of 10% for 60,000 cu ft areas over wide temp range . . .

dehumidifier requires no replacement or removal of chemicals

Uses: Dehumidification of electronic instrument areas, chemical laboratories, or other locations where low humidity is required.

Features: Unit removes up to 5 lb of water per hour. It will control humidity in areas up to 60,000 cubic feet with a constant dry air output of 150 cubic feet per minute over a wide range of temperatures.

Description: Regeneration of silica gel drying compound in dehumidifier is accomplished automatically by electric heating elements. Dual tower con-

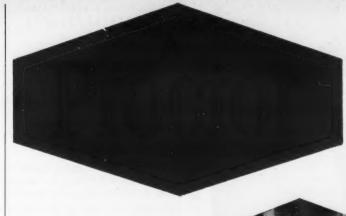


Dual tower provides constant flow of dry air

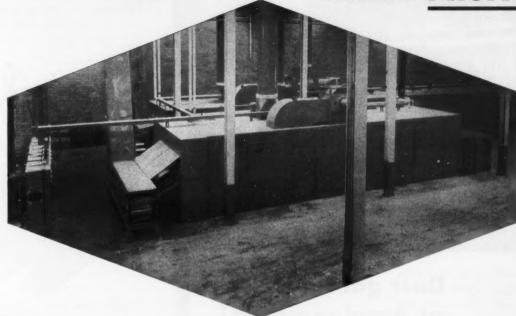
struction (one tower is regenerated while other continues to dehumidify) makes replacement or removal of chemicals unnecessary. Thermostat controls regeneration cycle. Unit requires only standard electrical outlets and a minimum of duct work. Size of unit is 51 x 28 x 44" and weight is 400 lb.

(Model T-150 dehumidifier is a product of Dryomatic Corp., Dept. CP, 812 N. Fairfax St., Alexandria, Virginia . . . or for more information check CP 2130 on form opposite last page.)

Easy method for figuring pressure drop through pipe fittings . . . see the nomograph on page 230



DRYING RANGE means a PROFIT!



Efficient drying per pound of product can often mean more direct profit to you than an increased sales volume! Proctor equipment provides the control, flexibility, and construction features essential to profitable drying performance. The result—increased yield of highest quality product. Write or phone today for complete information.

Product Uniformity is of utmost importance to every food processor, at all stages of processing.

Shown above is one of many Proctor & Schwartz dryer installations in one of the country's larger food plants—typical of the many in use in the food industry today. Here, because of Proctor drying skills, uniformity of color, taste, and overall customer appeal is maintained at uniformly highest levels—yields are greatly increased!

- HIGHEST PRODUCT UNIFORMITY
- INCREASED YIELD
- GUARANTEED PRODUCT QUALITY
- "W/M" CONSTRUCTION
- FLEXIBILITY OF OPERATION

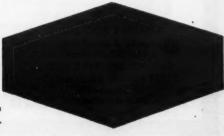
PROCTOR DRYING EQUIPMENT FOR THE FOOD AND PROCESS INDUSTRIES

- Tray Dryers
- Truck Dryers
- Pre-Forming Feeds
- Continuous Conveyor Dryers
- Spray Dryers



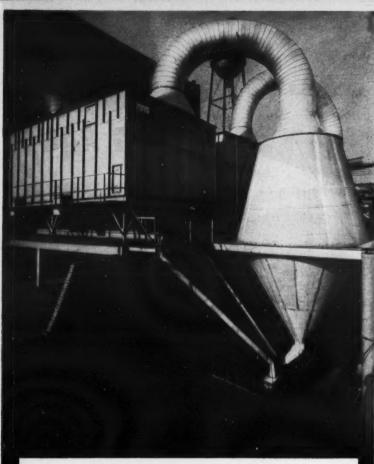
PROCTOR & SCHWARTZ, Inc.

Manufacturers of Industrial Drying Equipment and Textile Machinery • Philadelphia 20, Pa.



When inquiring check CP 2131 opposite last page

NG





Dust got their goat at Amalgamated!

Pangborn rids plant of goatskin dust, gets higher production at lower cost.

Processing 25,000 goatskins daily created a serious dust problem for Amalgamated Leather Co., Wilmington, Del. Dust was so thick during the buffing operation that workers had to stop every half hour to clean up. Pangborn Dust Control solved this problem. The atmosphere during buffing is now clean. Workers do better, continuous work. Plant and machin-

ery maintenance costs are lower. No wonder Amalgamated says Pangborn is "really doing

Pangborn can solve your dust problem. Pangborn engineers will be glad to show you how Pangborn Dry or Wet Dust Collectors can save you time, trouble and money!



When inquiring check CP 2132 opposite last page

ENGINEERING & MAINTENANCE

Starting shock to machines reduced with part winding motor and starter . . .

> coupling unit with magnetic increment starter provides two or three step operation

Uses: Installations where reduced torque on starting is advisable.

Features: Motor design permits half of winding to be energized at starting for two-step action or activated at reduced voltage for three-step cycle.

Description: Unit can be coupled with any magnetic increment starter made for the purpose. Locked rotor current is reduced to approximately 65% of



Part winding motors are available in all standard enclosures

normal and starting torque on first step is about 50% of full voltage torque (hence name). Part winding motors are available for normal and high torque applications, in all standard enclosures and from 5 to 200 hp.

(Part winding motors are a product of Howell Electric Motors Co., Dept. CP, 409 N. Roosevelt, Howell, Mich. . . . or for more information check CP 2133 on form opposite last page.)

Buyers' guide for steel

Four-page bulletin serves as a buyers' guide to bars, structurals, plates, sheets, and strips of steel. Specifications, types, and other data are given.

Bul 11-2 is issued by Joseph T. Ryerson & Son, Inc., Dept. CP, Box 8000-A, Chicago 80, Ill. When inquiring reader may simply check CP 2134 on Reader Service slip which is located opposite last page.



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10.000 P.S.I.

Wherever high pressures are involved in automatic processes, there can always be an explosion hazard. Wherever this is true, the Teledyne will transmit pressure information to protected locations. The Teledyne is highly accurate and extremely durable. Bonded strain gage construction makes the Teledyne insensitive to vibration. Among its other features are high frequency response, linear output over full pressure range, and stainless steel pressure chamber for handling corrosives (including fuming nitric acid). Easily disassembled for clean-out and repairs.

PLEASE NOTE: Contact us for calibration service on Pressure Transducers. 0 to 25,000 P.S.I.

Write for Illustrated Literature



When inquiring check CP 2135 opposite last page

CHEMICAL PROCESSING

ENGINEERING & MAINTENANCE

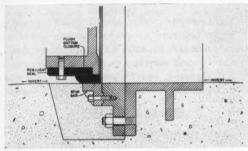
Bottom-seating sluice gate gives smooth liquid flow, complete drainage . . .

flexible neoprene bottom strip eliminates sill or trough for gate seating

Uses: Control of liquid flow in waste disposal, water for filtration, and sewage treatment.

Features: Sluice gate seats flush with bottom of chamber to give smooth flow and complete drainage when opened.

Description: Flexible neoprene strip on bottom of gate disc gives a cushion closing seal which com-



Schematic of sluice gate's bottom seal

presses on stop bar. Conventional sill or trough is not required, allowing regular flushing action to prevent accumulation of silt or debris.

(HY-Q sluice gates are a product of Rodney Hunt Machine Co., Dept. CP, 55 Mill St., Orange, Mass. . . . or for more information check CP 2136 on form opposite last page.)

Accurately metered output from 2 cc/hr minimum up to 15,000 gph . . .

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pump series handles pressures up to 50,000 psi

Uses: Feeding water treating or other chemicals into high pressure systems.

Features: Pump series has capacities ranging from 2cc/hr up to 15,000 gph in simplex, duplex, triplex, and quadruplex styles.

Description: Reciprocating-plunger units operate at pressures up to 50,000 psi. They are adaptable to manual and automatic control. Design provides mechanical advantages that permit a reduction in horse-power normally required for the pressures involved by as much as 30%.

(Metering pumps are a product of Philadelphia Pump and Machinery Co., Dept. CP, 1513 Race St., Philadelphia, Pa. . . . or for more information check CP 2137 on form opposite last page.)

Pumping Progress Report

FOR HYDRAULIC ENGINEERS

An advertisement prepared by the Aldrich Pump Co., Member of Hydraulic Institute, U.S.A.

PUMP INSPECTION, MAINTENANCE AND REPAIR are jobs too frequently ignored in the design of production pumps. This has been verified by a survey of more than 15,000 pump installations. Speed and economy of maintenance was frequently quoted as a major factor in pump selection.

SECTIONALIZED FLUID—ENDS offer one of the best ways to guarantee both speed and economy in pump maintenance. As originated by ALDRICH Pump Co. Engineers, the Sectionalized Fluid-End comprises four main assemblies — the working barrel, suction manifold, discharge manifold and stuffing box.

SPEED IN MAINTENANCE is assured because of ease of accessibility of all wearing parts. Manifolds can be slid back on studs and valves removed as complete units. Split collar and flange connection of plunger to yoke permits easy removal of plunger.

ECONOMY OF MAINTENANCE results from speed in maintenance. Perhaps even more important is the simple fact that it is cheaper to replace a single section than a complete fluid-end.

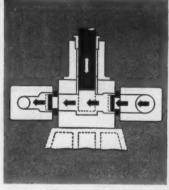
Another important economy is parts interchangeability. Among 3-, 5-, 7- and 9-plunger units of any series, wearing parts are interchangeable. Where a combination of multiplex pumps is required, this reduces spare parts stocks.

THE ALDRICH PUMP COMPANY is the originator of the

DIRECT FLOW principle — a design innovation
that utilizes the sectionalized fluid-end
principle. Aldrich Engineers have become
known as the people to take your tough pumping
problems to. We have never turned down a
challenge.

FURTHER INFORMATION can be had direct from the company.

Tell us your problem and we'll send you Data
Sheets describing the size pump we recommend
to solve your problem. Address your request
to: The Aldrich Pump Company, 23 Gordon
Street, Allentown, Pa.



Aldrich Direct Flow Fluid-End Design

...for your tough pumping problems specify ALDRICH

The Direct Flow principle, an Aldrich design innovation, is a major forward step toward the solution of tough pumping problems of all kinds. Not only does it eliminate two right-angle turns in the fluid-end, but in addition makes possible complete Fluid-End Sectionalization. This is another Aldrich design innovation which permits economies of maintenance and repair offered by no other type pump.

CHECK THESE ADVANTAGES OF SECTIONALIZED FLUID-ENDS:

Less expensive parts replacement
Ease of inspection and maintenance
interchangeable wearing parts
No special equipment
for valve removal
Easily accessible stuffing boxes



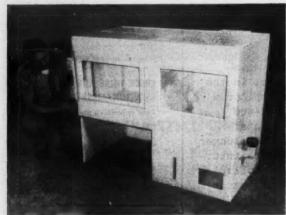
Write today for Data Sheets describing the Direct Flow Pump Series.



Originators of the Direct Flow Pump 23 GORDON STREET ALLENTOWN, PA.

Representatives in principal cities





Pictured above is a self-supporting AGILENE etching unit. Fabricated by welding from 3/4" and 1" plate this unit is entirely impervious to corrosion from the 10% hydrofluoric acid solution handled.

AGILENE the outstanding material of construction for the Chemical Processing Industries.



When inquiring check CP 2139 opposite last page

ENGINEERING & MAINTENANCE

Aluminum rotor is featured In 1 to 5 hp series of motors . . .

> totally enclosed, they are fan cooled, have single or polyphase operation

Uses: Recommended for use in dirty, dusty, fume, and mist-laden atmospheres.

Ventilating fan is designed to provide Features. efficient operation in either direction. Stator windings have six-layer insulation. Rotor is made from



Motors are recommended for use in adverse atmospheres

aluminum, is practically indestructible. Mechanical modifications provide availability of brackets for bolting motor to machine or machine to motor.

Description: Totally-enclosed fan-cooled motors come in 1 to 5 hp, for both single phase and polyphase operation.

(1-5 enclosed cooled motors are products of Century Electric Co., Dept. CP, 1806 Pine St., St. Louis, Mo. Check CP 2140 opposite last page.)

Thermostatically tempers hot water with cold . . .

tempering valve adjusts from 115° to 160°F

To guard against excessively hot water by mixing in cold water as it is drawn.

Valve mixes cold with hot water only while the temp is above desired setting. Action provides tempered hot water.

Description: Tempering valve utilizes hermeticallysealed thermostatic element which does not use volatile liquid in bellows or bi-metal for power. It's readily adjustable from 115° to 160°F. It's fitted with two bronze unions for easy installation, operates well under any water conditions.

(Series 500 tempering valves are products of Taco Heaters, Inc., Dept. CP, 1160 Cranston St., Cranston 9, R.I. Check CP 2140A opposite last page.)



Eight standard models. Special models for lower or higher pressures. Applicable wherever low-volume output at high pressures is the requirement, such as static testing, powering presses for forming, shearing, clamping, etc. Thousands in use. Complete power packages also available. Send for Bulletins.

SPRAGUE

Engineering Corporation



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Uses:

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1144 WEST 135th STREET, GARDENA, CALIFORNIA

When inquiring check CP 2141 opposite last page



When inquiring check CP 2142 opposite last page

CHEMICAL PROCESSING

Spray indoors and out without spray booth, mask, or goggles . . .

spray gun converts high pressure to low by means of venturi

To convert existing high pressure paint spray systems to low pressure so that atomization takes place by air volume instead of air pressure.

Features: Specially designed spray gun makes a simple and immediate conversion by attaching to standard high pressure air and paint hoses. Explosive action of high pressure air that causes backspray, overspray, and spraydust is eliminated. It is possible to spray indoors as well as outdoors without masks, goggles, or spray booths.

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Atomizes surface coatings by air volume instead of air pressure

Description: Conversion gun handles all standard paints, varnishes, lacquer emulsions, lacquers, enamels, or whitewashes with either internal or external atomization and produces a round or flat jet 1/3" to 16" wide. Air at the rate of 50 psi and 6 cfm is automatically converted by a venturi in the gun to 11/2 psi and 60 cfm.

(Volumaire Model 501 conversion gun is a product of Roxon, Inc., Dept. CP, 50 Broad St., New York 4, N.Y. . . . or for more information about this product reader may simply check CP 2143 on form opposite last page.)

For more information on product at right, specify CP 2144
... see information request blank opposite last page



INDUSTRYS PROGRESS COOLING TOWERS AS & AIR TREATING EQUIPMENT PERPESENTATIVES NINCIANE CITIES FROM COAST Dept. 502 4625 Roanoke Parkway, Kansas City 12, Mo.

zone" of a cooling tower. This area is in constant contact with the hottest, wettest atmosphere in the tower. So, Pritchard has rejected any natural wood substitutes in the design of their drift eliminators. Pritchard eliminators

Pritchard drift eliminator design features a rigid framework. Surfaces that reduce drift loss are in a constant position for high drift recovery. Yet, blades, carried in slots, can ex-

customer provides field labor.

And Pritchard drift eliminators cover the entire plan area of the tower above the distribution system resulting in better air flow pattern and superior performance. How superior? A guaranteed drift loss of less than 0.2% of water circulated!



BRANCH OFFICES: New York, Chicago, Philadelphia, Tulsa, Houston, Baton Rouge

REPRESENTATIVES: In principal cities of U.S.A., Canada, Mexico, England, South America and Japan,

EUROPEAN PLANT: Airefool Nederland, N.V., Vloardingen, The Netherlands.

"There's an Airetool Tube Cleaner and Tube Expander for Every Type of Tubular Construction."

PRINGFIELD, OHIO

When inquiring check CP 2145 opposite last page

ENGINEERING

Grain oriented steel higher efficiency, lower weight . . .

> transformer's heavy tank offers good corrosion resistance

Oil-filled distribution transformer, wound of grain-oriented steel, is low in weight and has high efficiency. Easy to install, transformer has a tank of specially-treated heavy-gage steel which offers extra resistance to corrosion.

High-domed cover is held in place with one captive bolt, insuring speed, safety of installation. A reusable gasket conforms to shape of tank lip. Rigid upper channel construction cross member gives added strength, holds tank in-round



Grain-oriented steel core windings give high efficiency with light weight

under all conditions. Transformers are available through 167 kva. Cases for transformers of 37½ kva and above have radiating vanes for heat dissipation. Tanks have two built-in lifting lugs for ease in handling.

(Type HJS oil-filled transformers are product of Marcus Transformer Company, Rahway, New Jersey. . . . or for more information check CP 2146 on form which is located opposite last page.)

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GREENVILLE • SOUTH CAROLINA



When inquiring check CP 2147 opposite last page

OPERATES IN SECONDS! DELIVERS YEARS OF MORE EFFICIENT FILTRATION!

SPERRY
"HANDRAULIC"
FILTER PRESS
CLOSING DEVICE



Replaces the filler block . . . without alterations or extra space . . . to provide the speed and ease of hydraulic control in a low-cost manually-operated Closing Device. It's the newest member in Sperry's family of custom-engineered Filter Presses and auxiliary equipment. See the complete line in Sperry's big new catalog. Send for your free copy today.

Eastern Sales
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SPERRY

D. R. SPERRY & CO., BATAVIA, ILL.

When inquiring check CP 2148 opposite last page

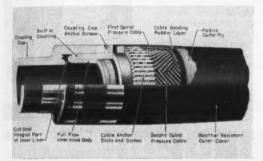
CHEMICAL PROCESSING

Pressure-resistant steel cables integrally join hose to coupling for high-pressure service . . .

permit full flow of fluid, eliminate flanges and sharp changes in outside diameter

 U_{ses} : Conveying liquids in large quantities at pressures of 1500-2500 psi where flexibility is required.

Features: Pressure-resistant steel cables, drawn through slots milled into a solid steel tube and secured by special set screws, make coupling an integral part of high-pressure hose.



Cutaway detailing hose construction and coupling

Description: Method of joining hose and coupling permits full flow of fluid and eliminates flanges, bolts, bulges, and sharp changes in outside diameter. Sudden parting of hose and coupling is prevented. Units of this type can be produced up to 6" ID. (High-pressure hose is a product of Thermoid Co., Dept. CP, 400 Whitehead Rd., Trenton, N. J. . . . or check CP 2149 opposite last page.)

Ease application of roof coatings or waterproofing with hollow handle brush . . .

heavy-duty pump equipment, to handle single jobs, available on a rental basis

Uses: Application of heavy-bodied oil-suspended or water-suspended roof coatings or waterproofings.

Features: Coatings can be delivered to brush face, through hollow handle and hose from container on ground, up to a distance of 600 feet.

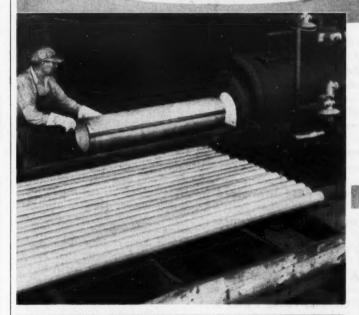
Description: Company supplies heavy-duty pump equipment, for single jobs, on a rental basis. Mechanical assembly and brush can be attached to any heavy-duty pump spray equipment where available. Brush is held in place by a spring clamp and may be changed in a matter of seconds.

(Brush and assembly are a product of United Laboratories, Inc., Dept. CP, 1608 Euclid Ave., Cleveland 12, Ohio . . . or check CP 2150 opposite last page.)

WELDCO offers...

Complete Annealing Facilities

For Unlimited Tubing Sizes



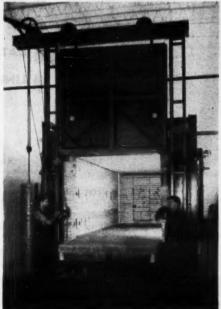
WELDCO continuously anneals 3" to 1234" stainless steel tubing through a conveyor-type gas-fired furnace with a water spray quench.

Large diameter and heavy-walled pipe are annealed in this Car-type annealing furnace. Diameters unlimited.

Write today for complete information and free literature.

THE YOUNGSTOWN WELDING AND ENGINEERING COMPANY

3708 OAKWOOD AVE. YOUNGSTOWN 9. OHIO



When inquiring check CP 2151 opposite last page

Economical for

If there's a bad odor to be masked or neutralized, or a good, salescompelling fragrance to be imparted, you'll find our pioneering experience in the field of technical odorization a great advantage in producing a tailor-made solution to your problem. Describe your needs in careful detail for prompt helpful assistance.



BRANCH OFFICES and "STOCKS: Atlanta, Georgia, Boston, Massachusetts, "Chicago, Illinois, Cincinnati, Obio, Claveland, Obio, "Los Angeles, California, Philadelphia, Pennsylvania, Sus Francisco, California, St. Louis, Missouri, "Toronto, Canada and "Mexico, L. F. FACTORY: Clifton, N. J.

When inquiring check CP 2152 opposite last page



This NEW, FREE literature belongs in your reference file . . . HERE'S COMPLETE DATA ON THE COMPLETE INE OF NEPTUNE PUMPS

> For superior handling of liquids in all Industries Chemicals, Paints, Petroleum, Water, Paper, Sewage, Pharmaceuticals and foods

Contains complete model specifications and performance data on Proportioning Pumps, Sump Pumps and Chemical Feed Units. Remember too, that our Engineers are available to study your individual requirements. . .to make a specific proposal for your specific needs.

Write for Catalog 1001. . . make it your ready-reference file.



NEPTUNE PUMP MANUFACTURING CO

CHEMICAL PROPORTIONING PUMPS AND SUMP PUMPS

When inquiring check CP 2153 opposite last page

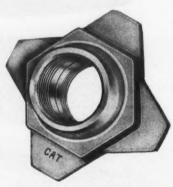
ENGINEERING

Fast make or break with either hammer or wrench . . .

> four-lug nut union provides flat striking surface

Joining sections of pipe, particularly in hard-to-reach places.

Features: Combination of lug and hexagonal shaped nuts with regular or double-start threads gives union fast make or break with either a hammer or wrench.



Lug nut is hot forged from solid steel bars

Description: Lug nut design provides a straight, flat striking surface which eliminates chance of glancing hammer blow. Units are hot forged from solid steel bars conforming to ASTM Spec A-105, grade 2, in sizes from 2 to 4" inclusive.

(Catawissa 4-Star Hammer Type Lug Nut Union is a product of Catawissa Valve and Fittings Co., Dept. CP. 450 Mill St., Catawissa. Pa. . . . or for more information check CP 2154 opp. last page.)

Covers glass fiber pipe insulation

Glass fiber pipe insulation combining maximum insulating efficiency with condensation protection is described in two-page bulletin.

Bul INI C9 is issued by Owens-Corning Fiberglas Corp., Dept. CP, 1833 Nicholas Bldg., Toledo 1, Ohio. Specify CP 2154A opposite last page.

dracco industrial

BETTER AIR HANDLING

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Dracco Fans assure dependable operation, withstand severe conditions, have low lifetime cost.

Heavy gauge steel construction, welded and vibration-free. Precisely balanced. No castings to crack. Accurate shaft. Rotation and discharge adjustable. Wide range of sizes: volumes from 500-46,000 CFM. "Performance Proved" by 15 years' service with Dracco Dust Control systems. For details, contact:



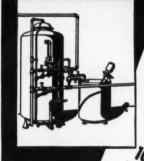
Fan Bulletin No. 601 containing complete performance data and specifications.

CORPORATION

070 EAST 116th STREET CLEVELAND 5, ONIO

When inquiring check CP 2155 opposite last page

Mixed-Bed Ultra Delonizer



REMOVES ALL MINERAL **IMPURITIES** FROM WATER for as little as

The Elgin Ultra - Delonizer produces water of even higher quality than obtained by distillation or evaporation at a mere fraction of the cost. It is a compact, easy to operate unit which requires very little space, Containing a mixture of cation and anion exchange resins in a single tank, it is low in investment and operating cost. Ask for Bulletin 512.

ELGIN SOFTENER CORPORATION

180 NORTH GROVE AVENUE, ELGIN, ILLINOIS

OTHER PRODUCTS Softwares Dealkalizery Lime Sod Write for Bulletins Deacrating Heaters Editors

When inquiring check CP 2156 opposite last page

CHEMICAL PROCESSING

NO

Eliminates splines or keyways when fastening hub to shaft . . .

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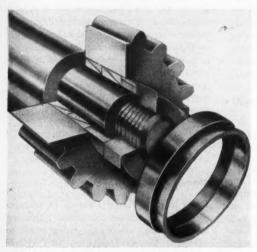
ION

device is wedged in place under heavy pressure with easy-to-use tools

Uses: For fast fastening of hub to shaft.

Features: Fastener eliminates need for splines or keyways with their attendant vibration, stress concentrations, and notch effects. It gives advantages of shrink or press fit but allows easy disassembly.

Description: Device is wedged between hub and shaft under heavy pressure by easy-to-use hand tools.



Outer ring expands and inner ring contracts to give firm grip

Outer ring expands and inner ring contracts. Fastener assembly consists of a straight cylindrical shaft and hub bore permitting liberal tolerances on simple cylindrical surfaces.

(Gripsprings are a product of U. S. Automatic Corp., Dept. CP, Amherst, Ohio . . . or for more information check CP 2157 on form opp. last page.)

Permeability, oil resistance of neoprene featured

System of measuring permeability is outlined in eight-page, two-color booklet. Comparison of permeability for neoprene and rubber is given. Pictorial illustrations detail a variety of applications where oil resistance and low permeability of neoprene solved problems.

Neoprene notebook No. 64 is issued by Elastomers Div., E.I. du Pont de Nemours and Co., Inc., Dept. CP, Wilmington, Delaware. When inquiring specify CP 2158 on form opp. last page.

BRIDGEPORT BRASS COMPANY

CONDENSER AND HEAT EXCHANGER TUBE EDITION

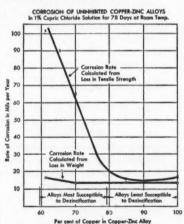
COPPER ALLOY BULLETIN

Bridgepor

Bridgeport MILLS IN BRIDGEPORT, CONN. AND INDIANAPOLIS, IND. — IN CANADA: NORANDA COPPER AND BRASS LIMITED, MONTREAL

How Inhibitors Retard Condenser Tube Dezincification

Dezincification in condenser and heat exchanger tubes occurs as zinc is lost from the copper-zinc (i. e., brass) alloy through corrosion. This lost zinc leaves as a residue, or by redeposition, a porous zinc-free mass of copper having very little mechanical strength. When the depth of corrosion is determined in uninhibited copper high-zinc alloys both on the basis of loss in weight and loss in tensile strength, a wide difference between the two final results is noted. This difference between weight and tensile strength is due to dezincification, which leads to only a relatively small loss in weight but a great loss in tensile strength as shown in the graph below.



Conditions Causing Dezincification

Dezincification may occur when brass is exposed over prolonged periods to moist or wet conditions, especially to non-mineral, scale-forming fresh or salt water, when the brass contains less than about 85% copper and when a dezincification inhibitor is absent. Dezincification is especially

promoted by (1) a limited supply of dissolved oxygen in the water, (2) the presence of certain salts, (3) a low water velocity or stagnation, and (4) elevated temperatures.

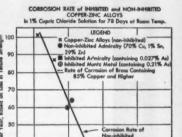
Mechanics of Inhibition

When arsenic is added to brass, dezincification and the redeposition of copper are retarded. Arsenic forms a film on corroding brass. As the thickness of this film increases, the electrical resistance of the film also increases. In electrolytic tests, it has been shown that this increase in resistance of the film leads to a decrease in the amount of current flowing through a cell to a point where the current drops to a small fraction of its initial value. The increase in potential is primarily due to the formation of the arsenic-rich film, the potential of the alloy shifting toward a more noble value which approaches that of copper.

Retarding Dezincification with Inhibited Alloys

Dezincification often can be prevented or retarded by regular mechanical or chemical cleaning, or a sufficiently high rate of turbulent flow which discourages the settling of corrosive deposits on the metal surface. The use of dezincification-inhibited alloys such as Bridgeport Arsenical Admiralty, Arsenical Aluminum Brass, and Arsenical Muntz metal provides a more satisfactory answer to this type of corrosion.

The difference in the rate of dezincification between inhibited and uninhibited brasses is shown in the following graph. The test results from exposure in flowing sea water are much in line with the laboratory test in 1% cupric chloride solution. The 1% solution was used because accelerated corrosion in



Red Bross (85% Cu. 15% Zei

this medium is comparable to that obtained in sea water over a much longer period. These tests were designed to give an accurate indication of what may be expected when inhibited brasses are exposed to cooling waters and the tests parallel closely actual service conditions.

Parcent Copper in Copper-Ziec Allov

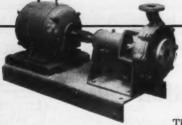
Bridgeport "Service-Matched" Condenser Tubes

Bridgeport's Technical Service and Corrosion Laboratory have acculmulated through the years extensive information on dezincification and other forms of corrosion. This knowledge is used in producing Bridgeport Condenser Tubes that help you prolong the service life of your equipment and cut the costs due to corrosion. That's why Bridgeport Condenser and Heat Exchanger Tubes are called "Service-Matched"—they are custom-engineered to meet your individual service requirements.

For helpful advice on the right Bridgeport "Service-Matched" Tubes for your application and technical help with your use of condenser and heat exchanger tube under various conditions of pressure, temperature and corrosion, call the Bridgeport office nearest you. Ask for your copy of Bridgeport's 156-page Condenser and Heat Exchanger Tube Handbook. (4018)

SAWNA

for highest operating efficiencies in handling small or large flows —



OLIVER TYPE L

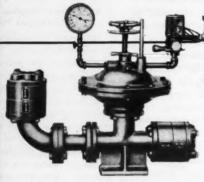
Centrifugal Pump

The Type L is a corrosion resistant chemical pump featuring a high cut-water or tongue of the volute. This makes the pump self venting . . . improves priming. Available in four standard sizes — 1", 1½", 1½" and 2". Contact parts are made of Alloy 20 or Type 316 stainless steel, bronze or cast iron. 1" model in Alloy 20 stainless steel only. Write for Bulletin No. 310.

Acid Handling Pump

OLIVITE

An efficient, durable pump for handling hot or cold corrosive solutions. Special rubber or neoprene base composition lines casing, cover and impeller. It does not crack or slough off even under high temperatures. Sizes available — 1½", 2" and 4". Write for Bulletin No. 308-R2.



OLIVER

Diaphragm Slurry Pump

This pump is designed to operate without mechanical linkage for transmitting

source of power is compressed air. There is no motor, stuffing box or packing. Capacity quickly changed from zero on up without stopping operations. Pump is ideally suited for handling slurries containing fragile crystals or floc. Six sizes available. Write for Bulletin No. 309-R.

Dorrollivas appropriate and additional content of the state of the state

Dorr-Oliver engineers, specialists in pump applications, will gladly discuss your pumping problems. Write for their assistance.

WORLD - WIDE RESEARCH . ENGINEERING . EQUIPMENT

When inquiring check CP 2160 opposite last page

briefs

from contemporary publications

Chemical quality control

The role of statistical quality control in chemical industry is discussed. Covered are reasons why some have trouble in getting started in a control program, ways to make a beginning, and problems of specification and testing. ("Industrial Quality Control," July, 1955, page 7.)

Vapor-liquid equilibria

From England come shortcuts to the determination of vapor-liquid equilibria for partially miscible binary systems. Sample calculations and a practical illustration of the method are included. Five pages, two tables, three figures, 13 references. ("Chemical and Processing Engineering," July, 1955, page 245.)

Economics of accidents

Costs of industrial accidents are discussed under headings of sustained management, adequate safety organization, shop supervision, education of employes, control of hazards, medical program, plant inspection, and investigation of accidents. Five pages. ("Mill and Factory," July, 1955, page 75.)

Properties of plastics

Impact and tensile properties of 56 rigid plastics were determined at temperatures between -65° and 77°F. Effect of temperature on tensile strength, modulus of elasticity, elongation, work to produce tensile failure, and Izod impact strength were studied. Eleven pages, two tables, seven figures. ("Modern Plastics," July, 1955, page 119.)

Maintenance control

In line with the present trend of supplying management with incontrovertible facts rather than nebulous opinions, this paper contains new methods for automatically detecting economic maintenance, avoiding gross repairs, and facilitating decisions relative to replacing equipment. Wear factors that are consistent with basic concepts are developed. Five pages, one table, three figures. ("Paper Industry," Aug. 1955, p. 428.)

Management

From England comes a survey of management which discusses commercial influences, specialization, historical background to present problems, feudalism, basis of production, and economic implications. Six pages. ("Paper Maker," midsummer issue, 1955, page 48.)

Increased pulp yields

Density and rate of growth of pulpwood can be increased through breeding and selection. Effects of thinning of timber, wood quality, density and yield, and of heredity are discussed. Six pages, eight figures, six references. ("Paper Industry," July, 1955, page 348.)

Drying of paper

This analysis of the drying of paper on multi-cylinder machines is concerned with calculation of temperature and moisture content throughout the drying section. Formulas are derived, and a discussion is included. Fourteen pages, six figures, six references. ('Tappi,'' July, 1955, page 385.)

NO

abstracts of pertinent articles in other industrial publications . . . selected by CP editors as a service to you . . .

Technical writing

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Albrecht and Gould of Rensselaer Polytech discuss importance of technical writing to industry and education. Various institutes of technical writing are mentioned, as well as the master of science program at Rensselaer. Three pages. ("Journal of Chemical Education," August, 1955, page 407.)

Fading of dyestuffs

Service fading of disperse dyestuffs by agents other than oxides of nitrogen is reported for acetate drapery fabrics dyed with "gas-fast" blues. Fifteen pages, 10 tables, two figures, nine references. ("Textile Research Journal," July, 1955, page 571.)

Pollution of air

This survey of management aspects of air pollution deals with economic losses, responsibility of management, and the public relations situation. Three pages, ("Mechanical Engineering," July. 1955, page 581.)

Canada's chemical industries

A Canadian economist reports on growth of Canadian chemical industries, new capital investment, the chemical profile of the nation, where its chemicals go, and its imports. Eleven pages, one table, four figures are included. ("Chemical Week," August 20, 1955, page 38.)

Demineralization

Methods of estimating and comparing costs of systems for demineralization of water are accompanied by flow sheets. Two pages, three figures. ("The Plant," August, 1955, page 43.)

Creativity

Methods of encouraging creative thinking in research departments are reported. "Brainstorming" and opinions of psychologists are included. Nine pages, eight figures, seven photographs. ("Chemical Week," July, 1955, page 39.)

Noise prevention

An industrial hygienist discusses measurement, control, and hazards of noise as encountered in industry. Three pages, three tables. ("Paper Mill News," August, 1955, page 8.)

Industrial Research

Trends in industrial research are surveyed by a leader in science and research. Topics include accelerated progress, productivity, and tempo of research. Ten pages, four figures, one photograph. ("Battelle Technical Review," August, 1955, Page 93.)

Inadequate executives

Characteristics of the executive with inadequate personality that bear on appearance, education, personal and family life, health, use of alcohol, production, cooperation, and responsibilities are discussed. Six pages. ("Dun's Review and Modern Industry," August, 1955, page 45.)

Powder metallurgy

Role of powder metallurgy in design of nuclear power reactors is discussed under headings of radiation effect, crystal lattices, grain structure, alloys, bonding, hazards, compactibility and sintering. Five pages, six figures, 10 references. ("Mechanical Engineering," August, 1955, page 665.)

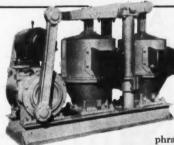
for maximum flow, long life, minimum maintenance

DORRCO Type V Pump

For removing underflows from Thickeners and Hydro-separators by positive displacement. Twin pumping chambers with individual suction and discharge connection for each chamber. Adjust-

able stroke while pump is running. Six sizes to handle up to 30 cu. ft. of pulp per minute. Write for Bulletin No. 5001.





Type W Pump

A rugged duplex diaphragm pump designed for big tonnage operation featuring variable ent while pump is running. Available in 6"

stroke adjustment while pump is running. Available in 6" and 8" models to handle up to 75 cu. ft. of pulp per minute. Write for Bulletin No. 5002.

DORRCO Plunger Pump

A dependable unit for pumping sludges in municipal and industrial water and waste treatment plants. Adjustable eccentric permits stroke variation of 1" to 5". Can be controlled by program time clock for optimum 24-hour operation. Write for Bulletin No. 5182.



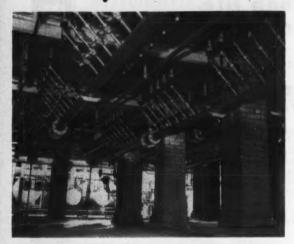
Dorr-Oliver engineers, backed by 51 years of pump design and application, will gladly discuss your pumping problems. Write for their assistance.



When inquiring check CP 2161 opposite last page

VG

Where performance counts....



FIRST CHOICE!

On critical services, such as these furnace burner valves on a TCC unit in a Gulf Coast refinery, DeZurik Valves assure the operator of long, trouble-free service life with little or no maintenance. They need no lubrication, always open and close with an easy quarter-turn, and they DON'T LEAKII



Exclusive DeZurik eccentric action and the resilient-faced plug do it! There's no binding, no sticking, no freezing with eccentric action after the first fractional movement of the handle, the plug swings

open without friction or drag. The resilient plug-facing delivers α conforming seal which is self-compensating for minor plug wear.

When your valving installations require high performance day after day, without breakdown or adjustments, specify DeZurik Valves. Manufactured in sizes from ½" through 20", in all castable metals, with manual or remote operation.

Write for details — or see us in Booth 423 at the Philadelphia Chemical Show.

DEZURIK SHOWER CO. SARTELL, MINNESOTA

When inquiring check CP 2162 opposite last page

CHEM SHOW PREVIEW

(Continued from page 10)



H. REEVE ANGEL & CO., INC. New York 7, New York

Filter papers made of glass fibers will be demonstrated. These combine rapid filtration with high retentivity.

ANSUL CHEMICAL COMPANY Marinette, Wisconsin

Industrial chemicals, including sodium bisulfate. A moisture indicator for refrigeration systems and dry chemical fire fighting equipment will be shown.

ARMCO STEEL CORPORATION Middletown, Ohio

Special stainless and heat-resistant steels and aluminumcoated steel for processing equipment, and equipment made from these materials.

ARTISAN METAL PRODUCTS INC.

Will feature Kontro Adjust-O-Film single-pass, heat transfer unit. Device can be operated continuously and automatically.

THE ATLAS MINERAL PRODUCTS COMPANY Mertztown, Pennsylvania

Corrosion-proof cements, protective coatings, tank linings, rigid plastic pipe and structures.

ATLAS POWDER COMPANY Wilmington, Delaware

Will show activated carbon for purifying, decolorizing, and deodorizing; surface-active agents; plasticizers for polyvinyl acetate and chloride; polyester resins for use with glass fibers in formation of structural sheets, pipe, and tubing; sorbitol for moisture-conditioning foods, cosmetics, pharmaceuticals.

AURORA PUMP DIVISION

see The New York Air Brake Company

AUTOCLAVE ENGINEERS SALES CORPORATION Erie, Pennsylvania

All-stainless valves with compression connections for 1/8 to 1/2" OD tubing.

AUTOMATIC SWITCH COMPANY Orange, New Jersey

Will exhibit direct-acting full port area stainless 2-way solenoid valve, 2-way cylinder-operated valve for highly corrosive fluids containing suspended solids, and solenoid pilot-controlled valve. Also a 3-way valve.

THE BABCOCK & WILCOX COMPANY New York, New York

Will exhibit seamless and welded stainless alloy and carbon steel tubing and pipe for pressure and mechanical applications. Stainless and carbon steel welding fittings will also be displayed.

BAILEY METER COMPANY Cleveland, Ohio

Three new developments are included in exhibit. DC receiver-recorder, a square-root pneumatic transmitter which can be actuated either mechanically or pneumatically, running time recorders for excess smoke density and similar applications.

BAIRD ASSOCIATES, INC. Cambridge 38, Massachusetts

New infrared recording spectrophotometer will be displayed. Designed for quantitative or qualitative work, model uses a double beam, incorporates self-balancing measuring system. Four prisms provide spectral range from 1.5 to 26 microns.

BARNSTEAD STILL & STERILIZER COMPANY Boston, Massachusetts

Water distilling and water demineralizing equipment. Featured will be the new Puromatic controller which permits only water of predetermined purity to enter process.

BARRETT-CRAVENS CO. Northbrook, Illinois

Two elevators, hydraulic foot lift and battery hydraulic, will be displayed. Industrial tractor which requires no operator will also be shown. In addition, a line of hand and electric industrial trucks, skids, portable elevators and related equipment will be shown.

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BEAUMONT BIRCH COMPANY Philadelphia, Pennsylvania

Line of special chains will be shown. Exhibit also includes periphery-sealed rotary feeders.

BECKMAN INSTRUMENTS, INC.

Fullerton, California

Reckman Division will exhibit flow colorimeter of both short- and long-path models. Dispersive infrared analyzers will also be shown.

ARNOLD O. BECKMAN, INC. South Pasadena, California

Recent developments include thermal conductivity and thermal conduction gas analyzers, dissolved oxygen analyzers, gas density balance. In addition to this, standard line of oxygen analyzers will be shown.

BEMIS BRO. BAG COMPANY

St. Louis, Missouri

Newly developed multiwall valve bag ("Mr. Little"), and molded cellulose products will be exhibited. Valve bag embodies fast-acting closure, moisture resistance.

BETHLEHEM APPARATUS CO., INC.

Hellertown, Pennsylvania

Gas-oxygen torch is addition to manufacturer's line. Also mercury cleaning apparatus, glass lathe.

THE BETTINGER CORPORATION Toledo, Ohio

The Toledo Porcelain Enamel Products Company division will show their corrosion-resistant roofing and siding - corrugated sheet steel with vitrified coating - at booth of Harold P. Ackerman.

B-I-F INDUSTRIES, INC. Providence, Rhode Island

In addition to regular line, three new developments are to be shown - metering pumps, continuous weighing dry chemical feeder, a redesigned dall flow tube. Dall flow tube is designed to handle water, air, other gases. It produces lower head loss than previous models.

BIRD MACHINE COMPANY

South Walpole, Massachusetts

Will exhibit complete line of centrifugal filters, rotary vacuum filters, centrifugals, and classifiers. Also shown will be the pan-type Prayon continuous, rotary, horizontal, vacuum filter.

J. BISHOP & COMPANY PLATINUM WORKS Malvern, Pennsylvania

Small diameter stainless steel tubing and nickel alloy tubing, fabricated tubular parts, platinum thermocouple wire, and fabricated platinum and platinum alloy spinnerettes and electrodes

BLAW-KNOX COMPANY Pittsburgh, Pennsylvania

Will exhibit low-temperature processing techniques, continuous deodorizer, Rotocel oilseed extractor, radiantfired kettle, fertilizer plant, nuclear energy display, resin plants, catalytic reforming, autoclaves, quick-opening doors, vapor heating systems, gas cleaners, contactors, and pilot plants.

Buflovak Equipment Division, Buffalo, N. Y., will display unit for concentrating heat-sensitive liquids, and an operating new type of mixer for dry solids.

(Continued on next page)



When inquiring check CP 2163 opposite last page

G



Celite Filtration assures perfect clarity— adds eye appeal and buy appeal to food products

TO GIVE foods and beverages that extra quality which results in more sales appeal, leading processors depend on Celite Filtration. The Celite method provides perfect clarity at high production rates.

Celite Filtration is efficient. It removes eventhe finest suspended solids. Moreover, Celite Filtration is economical. It may be used with any type of conventional filter, it is almost

automatic, and only unskilled labor is required for routine operation.

And Celite Filtration is flexible. To meet your specific requirements, Celite comes in nine standard grades of microscopically controlled particle size. The right balance between degree of clarity and rate of flow may be easily controlled. You can obtain perfect clarity in food products—highest purity in antibiotics—complete removal

of insoluble impurities from water, petroleum, chemicals, dry cleaning solvents and many other liquids.

A Johns-Manville Celite Filtration Engineer will gladly discuss the advantages and use of Celite in your product or production process. For his services, without obligation, write Johns-Manville, Box 60, New York 16, N. Y. In Canada, 199 Bay St., Toronto 1, Ontario.

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products.



Johns-Manville CELITE

INDUSTRY'S STANDARD FOR FINEST FILTRATION

When inquiring check CP 2164 opposite last page

CHEM SHOW

(Continued from preceding page)

BROOKFIELD ENGINEERING LABORATORIES, INC. Stoughton, Massachusetts

Exhibit includes recently announced eight-speed viscometer for wide ranges of viscosity and work with non-Newtonian materials.

BROOKS ROTAMETER COMPANY Lansdale, Pennsylvania

Two purge meters for small flows will be shown. In addition, continuous specific gravity indicator, industrial volumetric calibration system, remote indicators, and electrical transmitters for rotameters will be shown.

BUDA DIVISION

see Allis-Chalmers Mfg. Co.

BUFFALO METER CO. Buffalo, New York

Explosion-proof preset meters will be shown. These shut off pumps or valves when preset quantity is reached. Designs for corrosive service, oils and solvents, hot materials, and others are to be demonstrated.

BUFLOVAK EQUIPMENT DIVISION

see Blaw-Knox Company

BUILDERS-PROVIDENCE, INC.

see B-I-F Industries, Inc.

CAMBRIDGE INSTRUMENT COMPANY, INC. New York 17, New York

Gas analyzers for dissolved oxygen and hydrogen, dissolved oxygen, carbon dioxide, and combustibles, and analyzers for carbon dioxide, hydrogen, carbon monoxide will be shown. pH recorders are also to be included.

THE CARPENTER STEEL COMPANY Union, New Jersey

Alloy Tube Division is exhibiting stainless steel tubing and pipe, showing how problems of corrosion and fabrication have been solved by them.

CARRIER CONVEYOR CORPORATION Louisville 2, Kentucky

Vibrating conveyors will include a new spiral elevator and a heavy-duty, high-temperature unit. Another novel exhibit is a circular trough conveyor — material will travel in a closed circle.

CATALYTIC COMBUSTION CORPORATION Detroit, Michigan

All-metal platinum catalysts and pressure reactors for various applications in the chemical industry. A scale model plastic-constructed reactor will be shown.

CENTRICO INC. Englewood, New Jersey

Laboratory centrifugal separator featuring totally-enclosed feed and discharge. Also exhibited will be production-size automatic de-sludger for liquid-liquid-solid separation.

THE CHEMICAL AND INDUSTRIAL CORPORATION Cincinnati, Ohio

Nitric acid and ammonium nitrate plants. Exhibit will feature a scale model of a 120 ton-per-day acid plant. Model of nitrate plant also will be shown.

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CHEMINEER, INC.

Industrial mixing equipment. An experimental laboratory agitator, working model of a turbotube agitator, and a gear-driven side entering agitator will be shown.

CHEMPUMP CORPORATION Philadelphia, Pennsylvania

Complete line of hermetically sealed pumps that require no seals, no stuffing boxes, no lubrication.

CLEVELAND WORM & GEAR CO. Cleveland, Ohio

The Farval Corporation (sub.) will show a variablespeed mixing kettle drive arrangement with vertical speed reducer and variable drive. Both manual and automatic controlled units will be shown. A lubrication panel for spraying specified amount of lubricants on large gearing and slide surfaces at regular intervals will also be shown.

ARTHUR COLTON COMPANY

Detroit, Michigan

Batch mixers, multiple layer rotary tablet presses, granulators, multiple liquid fillers, drying ovens, and special tablet coating equipment.

COMBUSTION ENGINEERING, INC.

Chicago, Illinois

Raymond Division will exhibit an 18" vertical mill for extremely fine grinding applications. No. 127 screen hammer mill, for medium fine grinding applications, will also be shown.

COMMERCIAL FILTERS CORPORATION

Melrose, Massachusetts

Fulflo filters and honeycomb filter tubes. Units feature wide range of precision-controlled densities to give any desired degree of micronic clarity.

CONOFLOW CORPORATION Philadelphia, Pennsylvania

Redesigned current controller automatically positions autotransformers, rheostats or potentiometers. Universal design permits use with 200 combinations of electrical components.

CONSOLIDATED SIPHON SUPPLY CO., INC. New York, New York

Terriss Division will exhibit stainless steelware including filters, tanks, drums, shovels, buckets, measures, dippers, and other containers.

CONTROL ENGINEERING CORP.

Norwood, Massachusetts

Data logging equipment which does not employ slide wires or electron tubes. Explosion-proof transmitters will handle temperature, flow, liquid level, rpm.

COOPER ALLOY CORPORATION Hillside, New Jersey

Vanton Pump & Equipment Co. (div) will show Flex-I-Liner pump and give examples of how advanced knowhow makes the difference in castings, valves, fittings, and pumps.

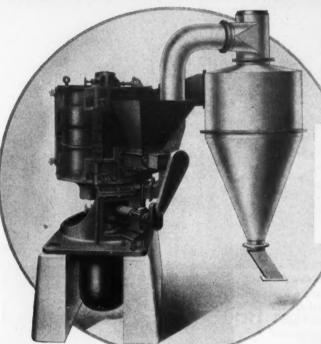
CORNING GLASS WORKS Corning, New York

Glass modular shell and tube heat exchangers of 50 and 13½ sq ft, also a 50 sq ft jacketed shell and tube steam heater.

(Continued on next page)

See these new type Pulverizing Units

AT THE CHEMICAL SHOW



Raymond BOOTH 68

RAYMOND VERTICAL MILL

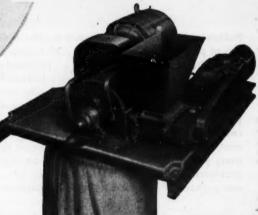
For producing superfine powdered materials in the lower micron sizes beyond the range of an ordinary pulverizer.

Air separation with the Whizzer Classifier maintains consistent uniformity required by today's high level specifications.

See Bulletin No. 70



These machines on exhibit at the Philadelphia CHEMICAL SHOW are representative of the complete Raymond Line of Pulverizing, Air Separating and Flash Drying Equipment, which has been serving industry for more than sixty-eight years.



RAYMOND RAY-DUCER

For grinding small and medium capacities of soft, dry materials. Designed for easy accessibility. Mill can be opened in seconds for cleaning, inspection or changing screens. Bulletin No. 80

COMBUSTION ENGINEERING, INC. 1317 NORTH BRANCH ST. COMPUSTION Engineering — Superheuter Ltd., Montreal, Canada PRINCIPAL CITIES COMBUSTION Engineering — Superheuter Ltd., Montreal, Canada PRINCIPAL CITIES

When inquiring check CP 2165 opposite last page

G



Philadelphia Gear Works is proud to offer a new line of packaged fluid agitators...plus complete fluid agitation engineering service ... plus field service -right in your plant-covering every phase of your particular fluid agitation applications. Our engineers are prepared to specify agitation to best meet your process requirements. As you know, Phillie Gear reducers for agitator drives have been meeting the most exacting standards of major processors for many years. We have the answers to your agitation problems. Let us assume the responsibility for every phase of your fluid agitator installations.

See our new agitator drive in action at the CHEM SHOW Dec. 5-9, Philadelphia Convention Hall, BOOTH 33.

SEND FOR ILLUSTRATED BULLETIN DESCRIBING NEW PACKAGED AGITATOR DRIVES.





Industrial Gears & Speed Reducers LimiTorque Valve Controls

Extablished 1857

Complete production facilities assure prompt

ERIE AVE. & G ST., PHILADELPHIA 34, PA. NEW YORK . PITTSBURGH . CHICAGO . HOUSTON . LYNCHBURG, VA

Virginia Gear & Machine Corp. . Lynchburg, Va.

PHILADELPHIA GEAR WORKS, INC.

When inquiring check CP 2166 opposite last page

CHEM SHOW

(Continued from preceding page)

CRANE COMPANY

Chicago, Illinois

Corrosion-resistant alloy valves of split-wedge disc design, improved disc-stem connection.

CROLL-REYNOLDS CO., INC. Westfield, New Jersey

Steam jet ejectors, fume scrubbers, jet heaters, and Chill-Vactors. Absence of moving parts in equipment results in low initial and operating costs.

CROLL-REYNOLDS ENGINEERING CO., INC. New York, New York

Self-cleaning filters for filtering chemicals and fluids where suspended particles are present in relatively small

CUNO ENGINEERING CORPORATION Meriden, Connecticut

Poro-Klean, Micro-Klean, Auto-Klean and Flo-Klean filters. The new Poro-Klean filter is a porous metal filter designed for high temperature, high pressure, and corrosive conditions.

DAVIS EMERGENCY EQUIPMENT CO., INC. Newark, New Jersey

Davis Instrument Division will show several new oxygen and combustion gas analyzers. These are portable and self-contained, powered by 115v AC.

DAVIS INSTRUMENTS

see Davis Emergency Equipment Co., Inc.

THE DAY COMPANY Minneapolis, Minnesota

A dust filter with a new method of media cleaning that's automatic, continuous. Also a demonstration of selfadjusting blow rings for reverse jet filters.

THE J. H. DAY COMPANY, INC. Cincinnati, Ohio

Gearless pony mixer with twin-motion agitators for premixing pigments. Capacity: 25 gallons.

DEAN PRODUCTS, INC. Brooklyn, New York

Thermo-Panels Division will have plate-type immersion heating and cooling units. These will be shown made of various metals and with a number of protective coatings, and some will be fabricated into many shapes.

DERRICK MANUFACTURING COMPANY **Buffalo**, New York

Vibrating screens for production or laboratory use. Features: non-blinding; high speed, capacities.

DICALITE DIVISION

Los Angeles, California

see Great Lakes Carbon Corporation

JOHN L. DORÉ COMPANY Houston, Texas

Teflon agitators, fittings, Teflon-lined neoprene bellows, Teflon-lined steel pipe for piping systems.

DORR-OLIVER INCORPORATED Stamford, Connecticut

Will demonstrate fluidizing techniques, industrial waste and water treatments, and various unit operations. Fullscale and scale models of equipment will be shown. DOWN

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DOWNINGTOWN IRON WORKS DIVISION

see Pressed Steel Tank Company

E. I. du PONT de NEMOURS & COMPANY, (INC.) Wilmington, Delaware

Textile Fibers Department will exhibit fire hose with Dacron cover fabric. Non-woven felts of Dacron for pneumatic and liquid filtration, thermal insulation, lubrication, and sealing. Filtration fabrics of Dacron, Orlon, Teflon, and nylon, plastic laminate reinforcing material for total or overlay reinforcement, and pump packing and diaphragms of Teflon will also be shown.

THE DURIRON COMPANY

Equipment made from Durcon, a corrosion-resistant material based on epoxy resin, for handling severely corrosive solutions. Material has good mechanical properties, abrasion resistance, casting properties, and is a non-conductor.

DUST SUPPRESSION AND ENGINEERING COMPANY Lake Orion, Michigan

Wet-type dust collector. Unit uses centrifugal action and impingement against wetted surfaces to remove the dust from the air.

EASTERN STAINLESS STEEL CORPORATION Bultimore, Maryland

Stainless steel sheets and plates for tanks, floors, etc. A new "zebra" finish will be shown.

THE EATON-DIKEMAN COMPANY

Complete line of filter papers for industrial and laboratory applications.

ECO ENGINEERING COMPANY Newark, New Jersey

Centrifugal and rotary displacement pumps for moving highly corrosive materials.

THE EIMCO CORPORATION Salt Lake City, Utah

Complete line of filters including the Eimco-Burwell. Mechanized plate-and-frame design of latter decreases downtime, increases capacity, and reduces floor space.

THE ELECTRIC HOTPACK CO., INC. Philadelphia, Pennsylvania

Vertical drying oven shown will have a 25 cubic foot capacity. Uses for baking finishes, aging, drying glassware, and pilot plant operation will be demonstrated. Also an explosion-resistant oven and a refrigerated constant temperature room.

EMSCO MANUFACTURING COMPANY Los Angeles, California

Loading and unloading arms; stainless swivel joint, gear-driven swivel joint; and high temp, high pressure vacuum joints. Handle liquid chemicals and gases in piping that must flex.

ENTOLETER DIVISION

New Haven, Connecticut

see The Safety Car Heating & Lighting Co., Inc.

ERIEZ MANUFACTURING COMPANY Erie, Pennsylvania

Exhibit will include permanent magnet traps for pipelines, grates, plates, pulleys, and units for hoppers.

(Continued on next page)



Exploring the operating advantages of Goulds Fig. 3715 chemical pump.

Take this pump apart right in your office ... and you'll see how it can save you money

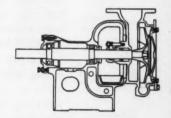
You'll find new features in the Goulds Fig. 3715 chemical pump.

They're features that make it a rugged, dependable, long-lived pump for handling corrosive liquids. And you can check them yourself without moving away from your desk.

We've built an aluminum model of the Fig. 3715 pump — complete in every detail. Ask your Goulds representative to show it to you:

You can open it up, take it apart, and see in detail such features as the easy method for adjusting impeller clearance—the chamber for cooling the support head so that you can operate the pump up to 350° F.—the design that permits you to inspect and clean the inside of the pump without disturbing the piping.

Call your Goulds representative today. Tell him you'd like to examine the Fig. 3715 model and he will gladly set a date at your convenience. Or write us in Seneca Falls and we'll make the arrangements promptly.



CROSS SECTION of Fig. 3715 pump.

You can get the Goulds Fig. 3715 pump in an alloy to meet your liquid handling requirements, including 316 and Gould-A-Loy 20 stainless steels, all iron, all bronze, bronze-fitted,—iron with stainless trim, or bronze with stainless trim. And it's available in 9 sizes providing capacities up to 720 GPM, and heads up to 200 ft. For additional details write for Bulletin 725.4.





Atlanta - Boston - Chicago - Houston - New York - Philadelphia - Pittsburg - Tulsa



KEEP PACE

with

WHAT'S NEW

at the

LU EXPOSITION OF CHEMICAL INDUSTRIES

COMMERCIAL MUSEUM and CONVENTION HALL

Philadelphia

Dec. 5-9

So much is happening in the fast-changing chemical process industries that the latest developments often have a way of escaping us for lack of time. There's a way to catch up—and keep up—with the newest in equipment, materials, methods. That way—and it's really the quickest and most effective way—is to personally inspect the more than 500 exhibits at this year's great EXPOSITION OF CHEMICAL INDUSTRIES.

You can SEE and COMPARE the newest processing methods...LOOK at the year's biggest array of materials and equipment...TALK with technical representatives of the country's leading suppliers.

Plan NOW to attend this great exposition... save time by writing today for advance registration and forms for hotel accommodations to

MANAGEMENT: INTERNATIONAL EXPOSITION COMPANY
480 Lexington Avenue, New York 17, N. Y.

When inquiring check CP 2168 opposite last page

(Continued from preceding page)

ERTEL ENGINEERING CORPORATION Kingston, New York

Filters, vacuum bottle fillers, stainless steel pumps, and asbestos filter sheets. All-plastic filter which requires no rubber washers will be shown. New stainless steel tube precoat pressure filter will also be exhibited.

THE EXACT WEIGHT SCALE CO. Columbus, Ohio

Automatic net weighing machine features over-andunder predetermined weight manual scales with capacities from 2 grams to 200 lb. Standard line of weighing and check weighing equipment will also be shown.

THE FARVAL CORPORATION

see Cleveland Worm & Gear Co.

FILTRATION ENGINEERS, INC.

Pilot plant models of drum-type rotary vacuum filters. Will also show FEON filter fabrics for use in filters and dust collecting equipment.

FILTROS INCORPORATED East Rochester, New York

Porous quartz filter media and catalyst supports. Among products exhibited will be "Flo-Clear" water filter, porous chemical porcelain, and organic bond filter and diffuser media.

DAVE FISCHBEIN CO. Minneapolis, Minnesota

Portable 101/2 lb bag sewing machine will be demonstrated.

FOOD MACHINERY & CHEMICAL CORPORATION Los Angeles, California

Peerless Pump Division will show their line of chemical process pumps for nearly all services. Pumps feature standardized bases, interchangeability.

THE FOXBORO COMPANY Foxboro, Massachusetts

Among the new equipment shown will be a precision valve positioner, pneumatic flyball integrator to operate from 3-15 psi. Magnetic flowmeters, differential pressure cells, temperature transmitters, recorders, and pneumatic transmitters will also be shown.

GABB SPECIAL PRODUCTS

see The E. Horton & Son Co.

THE GARLOCK PACKING COMPANY Palmyra, New York

Line of mechanical packings, seals, and allied items in Teflon, Kel-F, and silicones for corrosion-resistant, hightemperature applications.

GENERAL AMERICAN TRANSPORTATION CORPORATION New York, New York

Will exhibit models of the Airslide car, RDC extraction unit, Louisville dryer, modern tank storage terminal, granulated fertilizer plant, and examples of Kanigen plating process and plastic moldings.

THE GIRDLER COMPANY Louisville, Kentucky

The Votator Division will exhibit Votator equipment for the production of polyurethane foam and vinyl foam.

HART-CARTER TO EXHIBIT AT CHEMICAL SHOW

Visit Booth C-18 at the 25th Exposition of Chemical Industries in Philadelphia, December 5-9. You'll see standard operating models of Hart-Carter equipment which will demonstrate how the various types of machines size and separate free-flowing granular materials.

Get the facts about <u>ACCURATE</u> SIZING of granular materials

Hart-Carter machines size or separate by dimensional differences—that is, by length or by width or by thickness. These machines use (1) pocketed Carter discs or (2) indented Hart Uni-Flow cylinders or (3) Carter Precision Grader cylinders perforated with either slots or round recessed holes.

IN THE MEANTIME-

Two folders describe the principles and methods used in Hart-Carter equipment. One folder —L-1—discusses length separation. The other—CPG-2—describes sizing or separating by width or thickness. Write for these folders today.

HART-CARTER

COMPANY

677 19th Ave. N.E. Minneapolis 18, Minn.

MACHINERY FOR CLEANING AND SIZING GRAIN, SEED, AND OTHER GRANULAR MATERIALS

When inquiring check CP 2169 opposite last page

CHEMICAL PROCESSING

Chicog Cable anti-sk

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F. R. G Akron, Flexible ciency through

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THE GLOBE COMPANY Chicago, Hilinois

Cable and tubing raceways for material handling, and anti-skid metal floor gratings.

GREAT LAKES CARBON CORPORATION Los Angeles, California

Dicalite Division will show Diatomite filter aids, filters, heat insulation, paint flatting agents, paper fillers, and other Diatomite products. Nerofil, a carbon filteraid, also will be exhibited.

GREAT WESTERN MANUFACTURING COMPANY Leavenworth, Kansas

Gyratory sifting and screening machines. Units feature patented gyratory vibratory motion which results in fast, accurate. screening. Equipment can be used on dry, liquid, or semi-liquid materials.

THE GREIF BROS. COOPERAGE CORP.

Drums and barrels for shipment and storage of dry, semi-solid and liquid products. These handle bulk shipments up to 400 lb or 75 gal.

F. R. GROSS COMPANY Akron, Ohio

Flexible rubber inserts for improving heat transfer efficiency of cooling rolls. Inserts block flow of water through center of rolls and make it spiral directly under roll surface.

B. F. GUMP CO.

Chicago, Illinois

Standard line of rotary sifters, controlled-volume feeders, net weighers, and barrel packers will be shown.

HAMER VALVES, INC. Long Beach, California

Gate, visible wedge, line blind, and plug valves will be exhibited.

HAMILTON MANUFACTURING CO. Two Rivers, Wisconsin

Laboratory table tops to be shown have acid-resistant colors. Natural wood finishes will also be shown.

HANOVIA CHEMICAL & MANUFACTURING COMPANY Newark, New Jersey

Will exhibit 1200w mobile germicidal unit for de-contamination of air in sterile process, food, and beverage preparation areas.

F. WARD HARMAN ASSOCIATES Halesite, L. I., New York

Will exhibit and demonstrate use of models for planning and constructing chemical, petrochemical, and oil refinery plants.

HART-CARTER COMPANY Minneapolis, Minnesota

Disc and other types of separation units for separating and sizing free-flowing granular materials. Exhibit will feature actual working models of equipment.

HAVEG CORPORATION Wilmington, Delaware

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Corrosion-resistant equipment of polyester-glass and PVC, and new types of acid-proof cements for tank linings and laying of brick linings and floor coverings. Haveg equipment is also being exhibited.

(Continued on next page)

See them at the CHEM SHOW BOOTH NO. 309 PREMIER DISPERSATORS

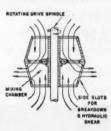


The Dispersator consists of a slotted cylinder rotating at high speed, the resulting centrifugal force causing the product to pass outward through the narrow slots at a considerable velocity. A shearing action is produced, first at the slots, and again as the product comes in contact with the relatively slower moving mass of liquid in the mixing vessel. Under these conditions particles in a mixture are dispersed very finely, whether the system consist of solid/liquid, liquid/liquid or gas/liquid phases. Many chemical processes may be speeded up and the dissolving of gums, resins, and gel-like materials is greatly accelerated.

LABORATORY AND PILOT PLANT DISPERSATORS

High Mixing Intensity for Development, Control and Routine Lab Mixing.







PREMIER 3200 DISPERSATORS • This dispersator is arranged for bolting to a 4", ASA 150 lb. mounting flange. To guarantee proper seal operation, the rigid shaft is firmly mounted in sealed-for-life bearings. A first-quality, inside type mechanical seal can be supplied, with provision for cooling and lubrication (if required) for operation to 150 psig. and 400°F.

PREMIER 2400 DISPERSATORS • For beam or channel mounting, open tank operation. Readily removable driven shaft with dispersator head makes this unit particularly adaptable to sanitary operations. Interchange of dispersator heads and shafts permits adaptation to multiple operations or batch sizes. When separately supported, various tanks can be rolled into position.

PREMIER COLLOID MILLS

Premier Belt Driven Mills for Laboratory, Pilot Plant, Small Production...For Laboratory and Development work or Pilot Plant and Small Volume Production activities. Adaptable to the most efficient handling of both low viscosity emulsions and barely flowable pastes.

PREMIER PRODUCTION MILLS • for the handling of emulsions and dispersions of a wide range of viscosities, peripheral velocities in the range of 5000 to 14000 feet per minute are employed by the Premier Colloid Mill. Capacities available from less than 30 to more than 2000 gallons per hour. Constructional materials are offered specifically suited to the requirements of each individual process.

If you cannot attend the Chem Show write for literature to





The photograph above illustrates the ease of cleaning and simplicity of disassembly which characterizes the

PREMIER MILL CORPORATION, GENEVA, N.Y.

When inquiring check CP 2170 opposite last page

FILTERTOWN GOES TO CHEM SHOW



SEE THE DISPLAY OF **AMERICA'S GREATEST** LINE OF FILTER PAPERS FOR INDUSTRIAL AND LABORATORY FILTRATION AT BOOTH 425

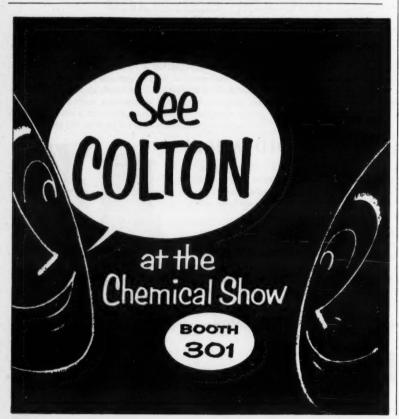
Expert technicians will be on hand to answer questions about your filtration problems. See the most complete line of filter papers available from one source. Made by the only company in America exclusively engaged in the manufacture of filter papers for science and

Since 1890

THE EATON-DIKEMAN COMPANY

FILTERTOWN MT. HOLLY SPRINGS, PA.

When inquiring check CP 2171 opposite last page



CHEM SHOW

(Continued from preceding page)

HERCULES FILTER CORPORATION Hawthorne, New Jersey

Pressure leaf filters - both self-cleaning and manuallycleaned models. New plastic sheet filter and pilot model pressure leaf filter will also be shown.

HEWITT-ROBINS INCORPORATED Stamford, Connecticut

High-speed Vibrex screen for fine mesh screening. Unit features circular stroke, mechanical vibrator, and minimum blinding.

HINCKLEY CORPORATION Belmont, Massachusetts

Positive displacement pump for corrosives, abrasives. Uses rotor arm principle.

HERMAN HOCKMEYER & COMPANY

Bronx, New York

Heavy-duty mixing equipment. Exhibited will be a 60gal pony paste mixer designed for handling extremely heavy pastes.

HOKE, INCORPORATED Englewood, New Jersey

Use of instrument air valves, toggle valves, and manifold valves will be shown in miniature panel board.

THE E. HORTON & SON CO. Windsor Locks, Connecticut

Gabb Special Products Division will show industrial mixers from a 34-hp lab size to 5-hp industrial models. Featuring double contra-rotating impellers with close clearance, these exert strong shearing action.

THE FRANK G. HOUGH CO. Libertyville, Illinois

Two models of tractor shovels for loading and stockpiling bulk chemicals will be displayed. These feature 40° breakout and high capacity.

ILLINOIS WATER TREATMENT CO. Rockford, Illinois

Will exhibit ion exchange equipment and distribute latest information regarding ion exchange for purification of all kinds of liquids and gases.

THE IMPERIAL BRASS MANUFACTURING COMPANY Chicago, Illinois

Advances in tubing connections and valving, including nylon fittings. Other fittings and tools utilized in making installations.

INDUSTRIAL STEELS, INC. Cambridge, Massachusetts

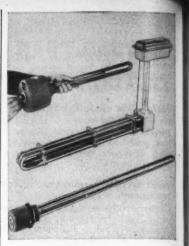
Stainless non-slip floor plate that's light in weight, corrosion-resistant, and has high strength.

INSUL-MASTIC CORPORATION OF AMERICA

Fire-retarding insulating mastic for metal structural supports that will delay buckling or collapse.

THE INTERNATIONAL NICKEL COMPANY, INC. New York, New York

A wide range of applications where nickel-containing alloys are combating corrosion, high temperatures, erosion, abrasion, and wear in the process industries will be shown, along with recently-developed alloys and a welding electrode.



CHROMALOX Electric IMMERSION HEATERS

with or without built-in thermostats ... fit the heat to your need up to 100,000 watts and 25,000 psi

Full range of sizes and ratings in portable. screw-plug and flanged types. Available with copper, steel or alloy sheaths to resist corrosion.

Used for heating water, asphalt, greases, molten salts, pickling and plating baths, process kettles; for superheating steam and compressed air; for melting lead, solder, babbit; and for a wide range of similar applications.

Let the Chromalox Sales-Engineering staff solve your heating problems . . . electrically.

Write for your copy of Catalog 50

-for full information on the complete line of Chromalox Electric Heaters and controls.

For ideas on additional applications of electric heat, request Booklet F1550-"101 Ways to Apply Electric Heat."



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Edwin L. Wiegand Company

7517 Thoma	WIEGAND COMPANY as Boulevard, Pittsburgh 8, Pa. e to have
bound 1 /	f Catalog 50 f "101 Ways" Engineer contact me.
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When inquiring check CP 2172 opposite last page

CHEMICAL PROCESSING

JABSCO PUMP COMPANY Burbank, California

Small rotary self-priming pumps with neoprene impeller for transfer and circulation of various chemicals. These include stainless steel, bronze, cast iron, and plastic models.

JEFFREY MANUFACTURING CO.

Drum dryer, mechanical conveyor for handling medium and light granular materials, mechanical vibrating conveyor for larger tonnages; constant weight feeder for gravimetric feeding; electric vibrating pan feeders for regulating feed to conveyors, crushers, and other processing equipment; swing hammer pulverizer for fine reduction.

JERGUSON GAGE & VALVE COMPANY Somerville, Massachusetts

Specialized liquid-level gages for chemical industries, and a new line of specialized sight flow indicators of one, two, or reflex one-window type.

JOHNS-MANVILLE New York, New York

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Will show insulations for process equipment and piping for -400°F to 3000°F service temp, refractories, Transite asbestos-cement pipe, packings and gaskets, Diatomite products for filter aids and mineral fillers, synthetic silicates, Transite movable walls, and a new sheet material for lab furniture and equipment.

THE M. W. KELLOGG COMPANY New York, New York

Dispersion applications and laminates of Kel-F plastic for corrosion control, other applications. New developments in chemical plant construction and engineering concepts will be described.

KEWAUNEE MFG. COMPANY Adrian, Michigan

Safety chamber for lab work. Enclosed work box with expandable connected gloves is designed for radio-chemical, toxicological or other work.

KIMBLE GLASS CO.

see Owens-Illinois Glass Co.

KINETIC DISPERSION CORPORATION

Will show Kady high-speed laboratory dispersion and homogenizing mill and also the Kady high-speed re-

KONTES GLASS COMPANY Vineland, New Jersey

An improved McLeod gage will be demonstrated. Exhibit also will include a manometer for absolute pressures from 0 to 240 mm Hg.

LABORATORY EQUIPMENT CORP. St. Joseph, Michigan

Exhibit includes high frequency induction furnaces for sulfur determinations in hydrocarbons, carbon in sulfur and steel, etc. Equipment will be in operation—samples may be presented for analysis at the show.

LABORATORY GLASS SUPPLY CO. New York 31, New York

Flash evaporator for research and an electro polarizer for direct analysis of metals.

(Continued on next page)

Z. A DISC

A BODY

Now - A Revolutionary NEW Steam Trap!



this steam trap practically eliminates maintenance

Major advance in trap design!

Imagine a steam trap machined from a solid block of stainless steel. A trap with only 3 parts...cap, disc and body...and not even a valve-closing mechanism—the kinetic energy of steam closes the valve and only the TD uses this new operating principle.

That's the revolutionary new Sarco type TD. It has only one moving part...a hardened SOLID stainless steel disc. And it is not affected by superheat, water-hammer, corrosive condensate. That's why we can say INSTALL IT—FORGET IT!

Use the SAME trap for 10-600 psi...for light or heavy loads ... without seat or valve change or other adjustments. Closes tight on no load—no steam waste.

Ask for a 60 day trial installation of Sarco TD trap and strainer... write for bulletin 257. Sarco Company, Inc., Empire State Bldg., New York 1, N. Y.

SARCO

Only Sarco Makes All 5 Types

That's why Sarco can give impartial advice on proper steam trap selection.



SIMPLICITY ITSELF!

No valve-closing mechanisms to wear or stick. No

critical clearances to

choke. No gaskets to leak. Only moving part a SOLID stainless steel disc.











When inquiring check CP 2173 opposite last page



for Chemical Processing Advertisers*

The emblem at right is that of NBP-National Business Publications. You've probably seen it before on our contents page . . . rate card . . . or heading the CHEMICAL PROCESSING listing in Standard Rate & Data. Because we're proud of it.

It signifies that CHEMICAL PROCESSING has qualified for membership in the largest association of technical, scientific and professional journals in the United States. (We're proud, too, that our C. P. executive staff includes a past president of NBP and a member of its Board of Directors.)

But belonging to NBP is more than a feather in our publishing cap. It's an important plus for every advertiser in CHEMICAL PROCESSING. Here are the membership requirements. Judge for yourself:

- Unbiased editorial content
- Periodic reader interest evaluation
- Non acceptance of questionable advertising
- Periodic audit of circulation
- Uniform rates to all advertisers

In addition, NBP provides the framework for a continuing exchange of ideas among member publishers. The result: continuing improvement in publishing practices to make CHEMICAL PROCESSING more useful to its readers . . more productive for its advertisers.





Chemical Processing

For men who manage the Chemical Processing Industries

Published by Putman Publishing Company

Creators of PUTMAN-STYLE Magazines
. terse, vital editorial; "hand-picked" circulation; square, high-visibility format; quality readership; hence more READER ACTION





CHEM SHOW

(Continued from preceding page)

THE LaBOUR COMPANY, INC. Elkhart, Indiana

Centrifugal pumps and valves, including a self-priming vertical packingless pump for flooded suction and suction lift. Also horizontal and gravity feed pumps.

LADISH COMPANY

Cudahy, Wisconsin

Stainless and alloy steel pipe fittings for virtually every corrosion piping service application.

LAPP INSULATOR COMPANY, INC. LeRoy, New York

Porcelain pipe, valves, fittings, and towers and packing. Ceramic rolls for photographic and textile uses. Pulsa-feeder (pump and meter) controlled-volume pumps and the Microflo Pulsafeeder for minute flow rates.

LAWRENCE PUMPS INC.

A polyvinyl chloride pump with built-in mechanical seal and an axial flow propeller pump for large capacities and low heads such as found in circulating.

LEBANON STEEL FOUNDRY Lebanon, Pennsylvania

An alloy casting process using ceramic molds for smooth finish, thin sections, close tolerances.

LEEDS & NORTHRUP CO. Philadelphia, Pennsylvania

Package control system for nuclear reactors is to be exhibited. Other new developments include free residual chlorine analyzer and current-adjusting electro-pneumatic control unit. Reactor control package is designed for all types of research and power reactors. Operation will be simulated at this demonstration.

J. M. LEHMANN COMPANY, INC. Lyndhurst, New Jersey

Finex variable-speed screening machines. Units are compact and feature high production rates.

LOGAN EMERGENCY SHOWERS, INC. Glendale, California

Manufacturer's line features decontamination, quickopening valve, accessibility for use, and a frost-proof non-clogging spray.

LOVEJOY FLEXIBLE COUPLING COMPANY Chicago, Illinois

Variable-speed pulleys spring loaded up to 8:1. Brake drum couplings and radial removable couplings in sizes from fractional to 170 hp will be shown.

THE LUZERNE RUBBER COMPANY Trenton, New Jersey

Corrosion-resistant flanged hard rubber valves in 1-4" IPS take working pressures up to 50 psi. Also shock-resistant plastic and rubber-resin compounds which company is molding.

MAGNETIC ENGINEERING & MFG. CO. Clifton, New Jersey

New magnetic separators shown will include a conveyor "hump", grates, pipeline traps. Full line of other magnets will also be shown.

MAGNETROL, INC.

Complete line of industrial liquid-level controls.

Courtesy of the publication MEDICAL ECONOMICS, creator of this copy, here adapted to CHEMICAL PROCESSING.

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CHEMICAL PROCESSING

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MANTON-GAULIN MANUFACTURING COMPANY, INC. Everett, Massachusetts

Homogenizers for emulsifying, dispersing, and processing abrasive and non-abrasive, viscous or non-viscous products. Also exhibited will be hydraulic pressure exchange pump and triplex horizontal pump for handling abrasive and corrosive products.

MARTINSON MACHINE COMPANY Kalamazoo, Michigan

Rotating bob and cup viscometer will be demonstrated. Analysis of graphical record will show how various rheological properties can be determined.

THE MASTER ELECTRIC COMPANY Dayton, Ohio

Electric motors and drives that are tailored to the chemical industry. Operating cutaway models will be used to show internal construction details.

MERCO CENTRIFUGAL COMPANY

San Francisco, California

Working model of the new Mercone continuous liquidsolid separator will be demonstrated.

METALWELD, INC.

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Philadelphia, Pennsylvania

Shows protective coating services for combatting corrosion and contamination.

FRANKLIN P. MILLER & SON, INC. East Orange, New Jersey

Heavy-duty crushers. Featured will be new wax chipper capable of handling 250 to 500 pounds wax per hour.

MILTON ROY COMPANY Philadelphia, Pennsylvania

Two novel controlled-volume pumps will be displayed. One is devised for "downhill" metering - where controlled volume is fed from higher to lower pressure of gases or liquids. Second pump employs pneumatic servo system for control of stroke while operating.

MINE SAFETY APPLIANCES CO. Pittsburgh, Pennsylvania

Two new items at this show will be a water vapor analyzer and a thermal conductivity analyzer. Manufacturer will also show LIRA infrared analyzer.

MIXING EQUIPMENT CO., INC. Rochester, New York

Will exhibit complete line of mixing equipment for chemical and process industries. Various working models will demonstrate operation of different types of mixers. Full-size operating cut-away top-entering mixer will also be demonstrated. Unit incorporates newest development in mechanical seals.

MOREHOUSE-COWLES INCORPORATED Los Angeles, California

Will exhibit latest models of Morehouse mills and Cowles dissolvers. Mills are equipped with carborundum grinding stones. Dissolvers incorporate the action of a high-speed impeller, which results in expending extremely high mechanical energy upon a relatively small volume of liquid media.

MUDCO INCORPORATED

Tulsa, Oklahoma

Butterfly-type valves from 11/2 through 10" sizes will be shown. These are compact, light-weight.

(Continued on next page)





Six advantages of Inco Castings

- 1. You get castings that generally outlast other materials under destructive service conditions. That's because they are made of Inco Nickel Alloys, which have been especially developed to withstand corrosion, abrasion, erosion and galling.
- 2. You get high quality castings because they are made to meet or exceed Government specifications for these high Nickel alloys.
- 3. You get castings in any practical design or size you need including centrifugal castings and standard pipe fittings. Inco has specialized in castings for over 47 years and is equipped to make your castings whether they weigh a few ounces or tons.
- 4. You get the benefit of Inco's help in solving your metal problems based on wide experience in field and laboratory testing of Nickel Alloys.
- 5. You get Inco Nickel Alloy castings made at Inco's own foundry; your assurance of sound, dependable castings.
- 6. Even castings you previously thought impractical to produce in Monel®, Nickel or Inconel® can often be cast by Inco's specialists.

How often have you wished you could get a wearing sleeve that would resist destructive conditions like abrasion and corrosion? Then take a look at these two sleeves.

The "S"® Monel sleeve pictured at top goes on the shaft of a salt water circulating pump.

Severe abrasion and corrosion from the sandy salt water in the gland seals used to wear out shaft sleeves in these pumps every 21/2 years. Usually sooner.

Then the engineers decided to try Inco-Cast "S" Monel sleeves. These sleeves have already withstood this abrasive and corrosive attack for nearly five years!

Pictured in the second photo is the rotor-shaftsleeve assembly for a midget Jordan machine. This machine processes highly abrasive raw asbestos. Ordinary sleeves were lasting only 15 months.

Then centrifugally-cast "S" Monel sleeves were tried. Judging from their appearance after more than a year's service, their owners estimate these sleeves will give"ten times as much service".

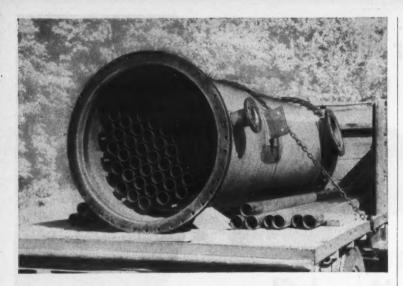
Unusual service like this is common when "S" Monel is used. Field records show it generally gives from three to ten times longer life than ordinary materials where service conditions involve destructive abrasion, corrosion, galling, or erosion.

Do you want to know more about this age-hardenable, corrosion-resisting casting alloy? Data on its composition, properties, and working instructions are summarized in a new bulletin, "Engineering Properties of 'S' Monel." Write for a copy today.

THE INTERNATIONAL NICKEL COMPANY, INC. 67 Wall Street New York 5, N. Y.

Inco Castings Sand, Centrifugal, Precision

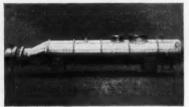
When inquiring check CP 2174 opposite last page



Special heat exchanger materials are well known at Downingtown!

Enamel-lined Tubes. This stainless steel heat exchanger, with enamel-lined tubes, solved a serious set of problems which included high temperatures . . . heavy corrosion . . . intermittent operation . . . and a tight budget. It now operates at 150% of design capacity, at a temperature of 1200° F.—and the owner reports trouble-free service from his Downingtown unit. Dimensions: 28" diameter x 10' 0" long. Stainless steel shell. Tubes: 3½" O.D., lined with high temperature enamel.





Ampce 8—Downingtown engineered these two fixed tube sheet benzene condensers for export. Process conditions required copper alloy tube sheets, yet the customer did not want a gasketed joint between tube sheets and shell flanges. So we welded the Ampco 8 tube sheets directly to the steel shells, thus saving the cost of alloy shells. Dimensions: 14" diameter x 12'0" long. Eighty copper tubes, 1" O.D. x 14 gauge. Ampco 8 tube sheets \%" thick. Ampco 8 heads \%" thick. Design pressure is 75 psi on shell and tube sides.

Solid Nickel—This solid nickel reboiler for vacuum service—one of eight identical units fabricated for one customer—was engineered by Downingtown to use a minimum amount of scarce and expensive materials. The double tube sheet construction required special assembly techniques. Notice the large nozzles, which were installed with a minimum of distortion by using proper care and skill during welding. Made of ¼" solid nickel. Dimensions: 34" diameter x 17" O' long. Has 292 nickel U-tubes, 1" O.D. x 16 B.W.G.

Visit us at the Chemical Show-Booth 714

We furnish complete thermal and mechanical designs, or fabricate to your plans. Send now for additional information.

Downingtown Iron Works, Inc.

Downingtown, Pennsylvania

New York Office: 52 Vanderbilt Avenue, New York 17, N. Y.



HEAT EXCHANGERS • TOWERS • PRESSURE VESSELS • STORAGE TANKS • STEEL AND ALLOY PLATE FABRICATION
Division of: Pressed Steel Tank Company, Milwaukee 14, Wisconsin • Manufacturer of Hackney Products

CONTAINERS AND PRESSURE VESSELS FOR GASES, LIQUIDS AND SOLIDS

When inquiring check CP 2175 opposite last page

CHEM SHOW

(Continued from preceding page)

MULTI-METAL WIRE CLOTH CO., INC. New York, New York

Wire filter cloth, strainers, filter leaves and plates. Will feature visual filter unit with glass housing.

A. B. MURRAY COMPANY, INC. Elizabeth, New Jersey

Will show with their affiliate company, The Murray Tube Works, stainless steel pipe tubing and fittings. Pressure sampling containers, used to sample liquids and gases while in process, will also be shown.

THE NASH ENGINEERING COMPANY

Compressors and vacuum pumps. Recently-developed pump has extended vacuum range of from 1.5." (Hg) absolute to 0.5." (Hg) absolute.

NATIONAL CARBON COMPANY

see Union Carbide & Carbon Corporation

NATIONAL ENGINEERING COMPANY Chicago, Illinois

Will display large and small muller-type mixers, along with system for complete control of mixing cycle including charging and discharging. Also showing wet-type dust collector.

NATIONAL ROSIN OIL PRODUCTS, INC. Savannah, Georgia

A pelletized rosin, stabilized against oxidation, for use where conventional rosin is detrimental due to oxidation. Pellets are easy to handle and store.

NATIONAL TUBE DIVISION

see United States Steel Corporation

NEUMANN & WEAVER, INC. Fair Lawn, New Jersey

German (Rheinhutte) centrifugal mixer and acid pumps. Mixer can handle both corrosives and abrasives up to 50,000 cp vicosities.

NEW BRUNSWICK SCIENTIFIC COMPANY New Brunswick, New Jersey

Stainless laboratory fermentor will have five liter capacity. Variable-drive assembly for fermentor is separator unit. Exhibit will also include rotary action constant temperature water bath shaker and other shakers.

NEW ENGLAND TANK & TOWER COMPANY Everett, Massachusetts

Line of portable and tripod-mounted propeller mixers.

THE NEW YORK AIR BRAKE COMPANY Aurora, Illinois

Aurora Pump Division will exhibit vertical and horizontal centrifugal pumps and turbine-type pumps.

NEWARK WIRE CLOTH COMPANY Newark, New Jersey

Industrial wire cloth, metallic filter cloth, strainers, testing sieves, and sieve shaker.

NIAGARA BLOWER COMPANY New York, New York

Will introduce new panel casing Aero heat exchanger. Unit can be used for evaporating, distilling, or condensing applications or for cooling compressed gases. A versatile new, precision instrument for measuring oxygen and combustibles in exhaust gases...

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PORTABLE COMBUSTION TESTER

For industries using combustion processes.
The Davis tester is built into an aluminum carrying case, weighs only 35 lbs.

Oxygen scale in two ranges—0-5% and 0-21%. Combustibles scale also has two ranges—0-3% and 0-15%.

Your Davis representative will gladly arrange a demonstration at your plant on request.

Send for Technical Bulletin No. 11-34. See our exhibit, Booth 939, at the Chemical Industries Exhibit.



DAVIS INSTRUMENTS

Division of

Davis Emergency Equipment Co., Inc.

56 Halleck Street, Newark 4, N. J.

When inquiring check CP 2176 opposite last page

CHEMICAL PROCESSING

NICHOLS ENGINEERING & RESEARCH CORPORATION New York, New York

Spray drying equipment, laboratory spray dryer, atomizers and air dispersers for spray dryers.

THE OKADEE COMPANY Chicago, Illinois

Quick-operating valves with Teflon seat which won't cold-flow under high pressures, and are long-wearing. Sizes: 34 to 8" in stainless and cast steel. Shown at booth of Harold P. Ackerman.

OMEGA MACHINE CO.

see B-I-F Industries. Inc.

ORONITE CHEMICAL COMPANY

see Standard Oil Company of California

OWENS-ILLINOIS GLASS CO.

Toledo, Ohio

Kimble Glass Division laboratory glassware and equipment to be shown includes Schellbach Burette, EOA Cassia flasks, micro-Fernbach flasks, and long-tip pipets.

THE PARKER APPLIANCE COMPANY Cleveland, Ohio

Tube fittings and tube-working tools for connection of instrument tubing; recently-developed flareless fitting.

PARKS-CRAMER COMPANY

Fitchburg, Massachusetts

Jacketed valves, fittings, and piping for conveying viscous materials whose fluidity increases with heat.

PEABODY ENGINEERING CORPORATION New York, New York

Scrubbers and air heaters. Units are compact, economical to operate, and possess wide versatility of application.

PEERLESS PUMP DIVISION

see Food Machinery & Chemical Corporation

PERKIN-ELMER CORPORATION Norwalk, Connecticut

Gas chromatography equipment has been recently announced by this manufacturer. Portable unit is versatile.

THE PERMUTIT COMPANY New York, New York

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Inc.

Ion exchange resins and equipment, especially in recovery of metals and rare earth metal.

PERRY PRODUCTS COMPANY Philadelphia, Pennsylvania

Stainless steel mixing, steam-jacketed, and coil-heated tanks of light gage, in standardized sizes.

THE PFAUDLER CO. Rochester, New York

Will exhibit a 28'-high glassed-steel column, a glassed-steel rotary dryer and blender, and a 10-gal titanium reactor. A newly-designed 500-gal glassed-steel reactor will also be shown.

PHARMACEUTICAL AND CHEMICAL INDUSTRY SUPPLY CORP.

New York, New York

Full line of ampule and vial packaging machinery, bottle washing, tablet strip packaging, capsule filler, and similar equipment to be shown. Exhibit will feature an electric thermometer for pyrogen tests.

(Continued on next page)



Cuno PORO-KLEAN filter stops 3-to 30-micron particles at 900°F

Cuno's new Poro-Klean offers true micronic filtration at temperatures that melt tin, bismuth, cadmium, lead or zinc.

High temperatures, high viscosity, high pressure drops and corrosive fluids don't faze this new filter.

It's all metal-absolutely lint-free. There's no contamination of the filtered fluid.

It's strong. Poro-KLEAN filters already in operation take a pressure drop of 1500 psi. Poro-KLEAN porous stainless steel has been used for structural parts in aircraft to achieve boundary layer control and transpiration cooling.

It's corrosion resistant. Standard in 316 stainless steel. Low carbon content (0.03 to 0.05% max.) prevents carbon precipitation at welds or during fabrication.

It's easily cleaned—in place, by backwashing with pre-filtered fluid or inert gas; or, when removed, with suitable solvent. May be sterilized with live steam for food or drug processing; or will filter rust and scale from steam used for other cleaning or sterilizing.

Its porosity is closely controlled. Four standard grades cover the range from 3- to 30-micron statistical particle retention.

Standard designs. For most applications standard housings and elements are available.

Get all the facts on Cuno's new Poro-KLEAN filter for your chemical or process applications. Write Cuno Engineering Corporation, 32-11 So. Vine Street, Meriden, Conn.



THIS PORO-KLEAN FILTER handles 180 gpm of naphtha at 400°F. Operating pressure: 700 psi ASME Code with 5 psi pressure: drop. It's cleaned by back-flushing with nitrogen. Cell-type Poro-KLEAN filter elements (large picture at top) have large surface area. This unit is 54" L x 9" O.D. and is designed for 1500 psi pressure drop and 550°F.



AUTO-KLEAN (edge-type) • MICRO-KLEAN (fibre cartridge) • FLO-KLEAN (wire-wound) • PORO-KLEAN (porous metal)

When inquiring check CP 2177 opposite last page

Let MULTI-METAL

Help Solve Your Filtering and Screening Problems



with METALLIC SEPTA

WIRE CLOTH

Plain, twilled, herringbone and cabled weaves in all meshes.



FILTER CLOTH

Plain or twilled Dutch, or braided, in every degree of density.

The above available in all commercial metals in all widths.

NEVA-CLOG

Rigid, perforated, double sheet, non-plugging-for filter leaves, tower bottoms, etc.

MYKRO-PORE

Electro-deposited, metallic, conical hole sheet openings as fine as 30 microns.

Research Engineering

Multi-Metal investigations on flow rates, filter media structures and coordinate technical aspects of filtration and screening have led to better processing equip-

Fabrication of Components or Complete Equipment



See Us at the Chemical Show

Be sure to see the exhibit of Multi-Metal "Know-how" in Booth 204, Exposition of Chemical Industries, Philadelphia, December 5 thru 9, 1955. See the demonstration of actual filtration, using various filter media in Multi-Metal's Visual Filter.



WRITE FOR CATALOG 50

MULTI-METAL WIRE CLOTH CO., INC. NEW YORK 59 N. Y

When inquiring check CP 2178 opposite last page

CHEM SHOW

(Continued from preceding page)

PHILADELPHIA GEAR WORKS

Philadelphia, Pennsylvania

Will show new line of packaged flow agitators. Also exhibited will be Limitorque valve controllers and selfaligning gear couplings.

PHILADELPHIA PUMP & MACHINERY COMPANY

Philadelphia, Pennsylvania

Proportioning pumps with three pressure ranges to 50,000 psi will be exhibited. Accuracy of these is 0.2 of 1% and they can be used in conjunction with automatic control equipment.

PHOTOVOLT CORPORATION

New York, New York

Exhibit will feature a compact line-operated pH meter. Other lab equipment to be shown includes colorimeters, fluorescence meters, reflectants and glossmeters, densitometers, and similar equipment.

PODBIELNIAK, INC.

Chicago, Illinois

Both gas chromatography and low temperature fractional distillation units will be exhibited.

POPPER & SONS, INC.

New York, New York

Automatic filling and sealing of ampules from one to

POTTER AERONAUTICAL COMPANY Union, New Jersey

An extended-range mass flow meter to be shown is insensitive of density vibrations. Exhibit also includes low-range flow sensing element and preset flow totalizer. Low-range unit measures flows from 0.07 to 0.7 gpm.

HORACE T. POTTS COMPANY

Philadelphia, Pennsylvania

Speedline stainless fittings designed for light wall Schedule 5 and 10 stainless pipe.

THE WM. POWELL COMPANY Cincinnati, Ohio

Complete line of valves, made of bronze, iron, steel, nickel, and corrosion-resistant alloys. Special valves will be exhibited: fitted, packless, quick-opening, relief, and flush bottom tank valves. Sight feeds and liquid-level gages will also be shown.

PRATER PULVERIZER COMPANY

Chicago, Illinois

Exhibit will consist of a complete line of rotary air-lock feeders for dust control, pneumatic conveying, and volumetric feeding. Permanent magnet chutes will also

PRECISION SCIENTIFIC COMPANY

Chicago, Illinois

Unique display booth will picture entire line of laboratory equipment in color transparencies.

PRESSED STEEL TANK COMPANY

West Allis, Wisconsin

Will show steel, stainless steel, aluminum, and Monel shipping containers for special chemicals, low-pressure and high-pressure compressed gas cylinders.

Downingtown Iron Works Division (Downingtown, Pa.) will exhibit heat exchangers and plate fabrication facilities and techniques.

RHEINHUETTE

MIXERS

This is the new high-speed mixer with the unique centrifugal impeller that has been creating intense interest in the chemical industry. Handles all mixtures with equal ease— from heavy thixotropics to light blending oils. The mixing action is so superio to that of conventional mixers that there is really no basis for comparison . . . it must literally be seen to be believed.

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The Type RE Centrifugal Acid Pump without stuffing-box has been the ultimate in acid pumps for over thirty years, because of its superior design, outstanding performance, utter reliability and absolutely no maintenance. The Rheinhuette pump line also in-



cludes true self-priming pumps for pure liquids; highly efficient vertical submersible pumps; screw impeller pumps; heavy-duty sludge pumps; and cement and slurry pumps. These pumps are built to your speci-fications in over 35 alloys.

VALVES

Hi-temp valves (Max. 800°C.) for dangerous or critical gas and liquid services with zero leakage. Rheinhuette also manufactures flat-plate gate valves; acid, slurry and metering valves; special valves for plastics and synthetic resins; and many special valves, for manual or automatic operation. Rheinhuette

valves are also built to your specifications in any one of nearly 40 different alloys.

SEE THIS NEW EQUIPMENT IN ACTUAL OPERATION IN BOOTH C 169 AT THE CHEMICAL SHOW! DEC 5 9. COMMERCIAL MUSEUM, PHILA.



or-write today for catalogs and quotations on the equipment you need.

NEUMANN & WEAVER, INC.

22-12 Raphael St., Fair Lawn, N. J.

When inquiring check CP 2179 opposite last page

PRESSURE PRODUCTS INDUSTRIES, INC.

Hatboro, Pennsylvania

"Canned" motor agitator and "Recipromix" magnetic agitator for pressure vessels. Devices eliminate need for stuffing boxes and can be used at very high pressures.

PROCTOR & SCHWARTZ, INC.

Philadelphia, Pennsylvania

Drying and continuous range processing equipment for chemicals, pharmaceuticals, and other related materials. New W-M construction (smooth interior) will be demon-

PRODUCTIVE EQUIPMENT CORP.

Chicago, Illinois

Vibrating screens for dry sizing, wet sizing, and dewatering applications.

PROPORTIONEERS, INC.

see B-I-F Industries, Inc.

PROTECTOSEAL COMPANY

Chicago, Illinois

Exhibit includes representative sample of complete line of safety equipment for handling flammable liquids.

PULVA CORPORATION

Perth Amboy, New Jersey

Com-Bin feeder for feeding wet, sticky, difficult-to-feed materials. Also shown will be Pulva-Sizer for finegrinding application.

THE QUAKER OATS COMPANY

Chicago, Illinois

Chemicals Department will show Furan chemicals for resin, synthetic rubber, petroleum, organic chemical, and other applications.

Electrostatic Division (Akron, Ohio) will exhibit recently developed electrostatic cleaning machine which continually extracts debris from flowing streams of cereal grains. Continuous moisture indicator will be shown.

QUELCOR INC.

Chester, Pennsylvania

Polyvinyl chloride plastisols, rigid sheets, laminated plasticized and rigid sheets, blocks, gaskets and molded items.

RAYMOND DIVISION

see Combustion Engineering, Inc.

REPUBLIC STEEL CORPORATION

Cleveland, Ohio

Products of titanium and alloys, stainless steel, plastic. Will also show a working model of an electronic, nondestructive testing machine. This device sounds alarms or places identifying marks on faulty sections of tube under test.

RESEARCH CONTROLS

Tulsa, Oklahoma

Specializing in miniature flow control equipment, exhibit will show new control valves with pneumatic diaphragm motor for 1/8, 1/4, and 1/2" IPT.

RESISTOFLEX CORPORATION

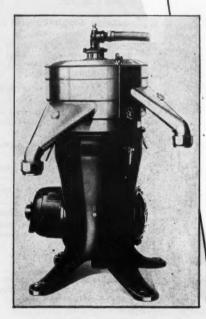
Belleville, New Jersey

Teflon-laminated pipe and hose assemblies, and special molded items such as diaphragms and bellows for chemical, food, and pharmaceutical uses.

(Continued on next page)

STRAIGHT LINE

...shortest distance to profits!



Why separate with slow, roundabout filters or settling tanks—when you can use a time-saving, profit-making straight-line method?...De Laval Centrifugals!

Many of the most efficient chemical and food plants find that De Laval Centrifugals make separation a continuous process, eliminate production bottle-necks, cut costs.

They have discovered that De Laval Centrifugals -whether used for separation, clarification or concentration—quickly pay for themselves ... frequently improve the product by doing a better job.

Get the facts on what De Laval Separators and Clarifiers can do for you...now!



DE LAVAL for faster processing systems.

THE DE LAVAL SEPARATOR COMPANY Poughkeeppie, New York + 427 Randelph St., Chicago 6 - DE LAVAL PACIFIC CO. 201 E. Millbrae Ave., Millbrae, Calif.

When inquiring check CP 2180 opposite last page

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Don't miss this DISPLAY



Come ... bring your key men

- ENGINEERS
- DESIGNERS
- **OPERATORS**

to BOOTH 336-338

25 Exposition CHEMICAL INDUSTRIES Philadelphia, Dec. 5-9

See our complete line of

ROTARY AIRLOCK **FEEDERS**

and

PERMANENT MAGNETIC CHUTES





Talk with top-notch technical men about your problems . . . learn how Prater Processing equipment can be applied to your specific needs . . . Now's your chance to compare first hand, the design features which have made Prater Rotary Airlocks and Permanent Magnets the world's finest. Don't miss this opportunity to discuss your ideas, plans and processes with



. foremost builder of Rotary Airlock Feeders PRATER PULVERIZER CO., 1513 S. 55th Ct., Chicago 50, III.

When inquiring check CP 2181 opposite last page

CHEM SHOW

(Continued from preceding page)

REYNOLDS METALS COMPANY Louisville, Kentucky

Quality aluminum chemicals; aluminum mill products for construction; and aluminum shipping containers for liquids and solids are being exhibited.

RIETZ MANUFACTURING CO.

Santa Rosa, California

Specialized chemical processing machinery for sizereduction, mixing, and heat exchange applications.

ROBBINS & MYERS INC.

Springfield, Ohio

Moyno pump for handling abrasive slurries and highly

ROCKWELL MANUFACTURING COMPANY Pittsburgh, Pennsylvania

Exhibit will include recently announced reciprocating liquid meter of stainless steel. Operation and potentialities for flow control will be demonstrated.

CHARLES ROSS & SON COMPANY, INC. Brooklyn, New York

Complete line of mixers and mills for processing liquid, paste, and other dry materials.

ROTHERM ENGINEERING COMPANY INC.

Chicago, Illinois

Revolving joints and liquid-level control units.

THE SAFETY CAR HEATING & LIGHTING COMPANY, INC. New Haven, Connecticut

Entoleter Division will exhibit impact mill for particle size reduction, deagglomerization, and similar applications. Unit features impact-resistant rotor and liner.

SARAN LINED PIPE COMPANY Ferndale, Michigan

Saran-Lined flanged, air-motor-operated diaphram valves for remote, automatic, or instrument control of pipe line

SARCO COMPANY, INC. New York, New York

Thermodynamic steam trap of stainless steel handles all loads and pressures from 10 to 600 psi.

CLAUDE B. SCHNEIBLE COMPANY

Will exhibit a working model of wet method dust collector for air pollution control, product recovery, condensing and absorption.

SCIENTIFIC GLASS APPARATUS CO., INC. Bloomfield, New Jersey

Complete line of laboratory equipment will include portable coil cooling unit, portable balance, magnetic stirring hot plate, many other items.

SCOTT AVIATION CORPORATION

Lancaster, New York

Breathing units for face masks for persons that are in hazardous areas, and for escape use.

SEALOL CORPORATION

Providence, Rhode Island

Mechanical seals for handling corrosives, abrasives, and a cartridge-type seal which withstands temperatures to 800°F and pressures to 300 psi.

HIGH **PRESSURE GAUGES**

USED IN REFINERIES AND

CHEMICAL PLANTS THROUGHOUT

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THE WORLD



THRU VISION



REFLEX Single or Multiple

Sections TUBULAR

Gauge Cocks Large Chamber Reflex Gauges Heated or Cooled

Gauges

SEND FOR

COMPLETE CATALOGUE

STRAHMAN VALVES, Inc. 16 Hudson St., New York 13, U.S.A

When inquiring check CP 2182 opposite last page

CHEMICAL PROCESSING

SIER-BATH GEAR & PUMP COMPANY, INC. North Bergen, New Jersey

Exhibit of gears, rotary pumps, and gear-type flexible couplings.

SIMPLICITY ENGINEERING COMPANY

Durand, Michigan

Model M-5 high-speed screen for sizing, scalping and dewatering applications. Unit has small vibrating collection hopper under main screening deck and is of allstainless-steel construction.

THE W. W. SLY MANUFACTURING CO. Cleveland, Ohio

Will introduce new wet-type dust collector and laboratory oven. Other models of dust collectors and filters will also be shown.

SOUTHWESTERN ENGINEERING COMPANY Les Angeles, California

Vibrating screen separators. Units are available in various sizes and provide continuous, clean, and accurate separations with any type of screenable material.

D. R. SPERRY & COMPANY

Batavia, Illinois

"Handraulic" filter-press closing device. Simplifies closing filter presses. Device can be installed on existing units or on new filter presses.

STANDARD OIL COMPANY OF CALIFORNIA San Francisco, California

Oronite Chemical Company (sub.) will exhibit. Isophthalic, a raw material for paint, resin, and plastics, will be described, along with many new applications. Detergent products, lube oil additives, polybutenes, and surface-active agents will also be displayed.

STANDARD STEEL CORPORATION

Los Angeles, California

Will exhibit new low-temperature drying equipment. New method of rotary drying increases yields, ups protein values of food products, and eliminates scorching.

STAR TANK & FILTER CORP. New York, New York

Stainless steel high-pressure pilot plant reactors. Units range in capacities from 5 to 30 gallons and withstand operating pressures up to 2000 psi.

F. J. STOKES MACHINE COMPANY

Philadelphia, Pennsylvania

New line of rotary tableting presses and new gas ballast mechanical rotary vacuum pump.

STRAHMAN VALVES, INC. New York, New York

Ram-type drain valves for closing and venting run-off kettles and claves. They operate by motor or compressed air.

STURTEVANT MILL COMPANY

Dorchester, Boston, Massachusetts

Micronizer grinding machine and laboratory jaw crusher and crushing rolls. Units feature rugged construction and open-door accessibility for easy cleaning.

THE SUPERIOR ELECTRIC COMPANY Bristol, Connecticut

Automatic voltage regulators for use in unattended installations. Feature: no tubes or moving parts.

(Continued on next page)



Joe Sims, plant engineer, wasn't as idly curious as he sounded when I overheard this conversation at a recent trade show:

JOE: What're you grinding up there?

Answer: It's sawdust-but we don't grind anything here. We're "mulling" (pouring the contents of an envelope into the mixer). Watch this . . . (pause).

JOE: That was fast!

Answer: The Mix-Muller dispersed that green dye throughout the sawdust in less than 2 minutes. Call the dye a binder or a reagent and you can better understand why a smearing or rubbing action is essential where dry materials must be mixed with relatively small quantities of liquids, semi solids or amorphous solids.

JOE: You tell me.

Answer: OK, if I stirred the dye in with a stick or paddle we would have a pepper and salt effect. The elements would be next to each other but not blended. It takes the folding of the Mix-Muller plow action, combined with a rubbing, kneading, muller action to give you an intimate, reacted if you will, blend of materials. Apply that to a product that must be extruded, cast, briquetted or wetted to a slurry and you can see why we say we sell controlled uniformity here.

JOE: (Later and aside to me) You know, asking those Mix-Muller people what mulling is, is like putting a nickle in a juke box. They've got a whale of a story on mixing dry solids-I know . . . we've got five of them in our plant. I reconfirm this story every time I come to this show.

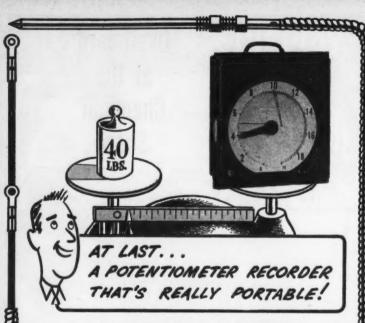
If you mix, and it's dry but not a powder, wet but not a liquid there's a whale of a story in this book for you. Write for "Mulling for the Chemical and Process Industry" today!







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In response to the increasing demand in industry for a truly portable indicating recorder, we have redesigned our standard Thermo Electronic Recorder ... making it 18 lbs. lighter ... without sacrificing either accuracy, sensitivity

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The simple connection and it is specified throughout for throughout for the continue element characteric.

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MUSEUM. PHILA. IN ... or write for cata Section 60-100 cove addition to the grow.

Pyrometers * Temperature Mon Quick-Coupling Connectors and The CHEMICAL S
ADDLE RIVER TOWNSHIP, ROLLIN CANADA—THERMO ELECTRIC In addition to recording temperatures in 19 standard ranges, from -100° to +100°F. up to 0° to 3000°F., it is also used to measure humidity, solution conductivity, speed, pH, direct current, DC voltage, power, strain, or any other measurement that can be converted to a change in resistance or DC millivoltage.

The simple design of the electronic balancing system of this instrument employs only three moving parts, and nylon drive gears and cam rolls are used throughout for quiet, durable operation.

A cam is used to drive the recording pen, thus permitting linear charts to be used for almost all measurements, despite the non-linearity of the sensitive

BE SURE AND SEE THIS NEW EQUIPMENT AT THE CHEMICAL SHOW IN COMMERCIAL MUSEUM, PHILA., IN BOOTH C156 158!

Section 60-100 covering this latest addition to the growing T-E line.

We have openings for qualified sales engineers and design engineers with electro-mechanical or instrument experience. Include resume with letter of application. Salary mensurate with ex-

SPECIFICATIONS

CHART DRIVE

speeds available.

Circular, 12" diameter, 4%" scale width, uniform gradua-

Synchronous, electric, 24-hour

revolution standard, other

CALIBRATION ACCURACY

±14 of 1% of scale span.

BALANCE CONTROL ACTION Continuous null, positive drive

of slidewire and pen, no gal-

vanometer, unaffected by vi-

One slidewire turn (less than

16%" wide by 18%" high by

±1/20 of 1% of scale).

CHART

bration.

SENSITIVITY

DIMENSIONS

NET WEIGHT

perience.

71/2" deep.

40 lbs.

Pyrometers • Temperature Monitoring Systems • Thermocouples • Protection Tubes Quick-Coupling Connectors and Panels • Thermocouple and Extension Wires

SADDLE RIVER TOWNSHIP, ROCHELLE PARK POST OFFICE, NEW JERSEY IN CANADA-THERMO ELECTRIC (Canada) Ltd., BRAMPTON, ONTARIO

When inquiring check CP 2184 opposite last page

CHEM SHOW

(Continued from preceding page)

TALLER & COOPER, INC. Brooklyn, New York

Telemetering system for supervision and control of industrial operations will be shown.

THE TECHNICON COMPANY Chauncey, New York

Automatic fraction collector to be shown is time-operated and equipped with accessories for counting individual drops of fluid. Small pumps and recording colorimeters will be shown also.

TERRISS DIVISION New York, New York

See Consolidated Siphon Supply Co., Inc.

ARTHUR H. THOMAS CO. Philadelphia, Pennsylvania

Modified Van Slyke apparatus to be exhibited as useful for determining radioactive carbon.

THE TOLEDO PORCELAIN ENAMEL PRODUCTS COMPANY

see The Bettinger Corporation

TORSION BALANCE COMPANY Clifton, New Jersey

A recently announced combination hardness tester will be shown. Unit is designed for testing of all metallic and many plastic compounds.

TOTE SYSTEMS, INC. Beatrice, Nebraska

Bins and bulk material handling equipment representing manufacturer's complete line will be shown.

TRANTER MANUFACTURING, INC. Lansing, Michigan

Platecoil heat transfer units for various heating or cooling applications. Units are compact, lightweight, and easy to install.

TRENT, INC. Philadelphia, Pennsylvania

Electrically heated products: sheath-type elements, furnaces, ovens, conveyor furnaces.

TRI-HOMO CORPORATION Salem, Massachusetts

Will exhibit ten models of dispersers and homogenizers. Constructed of stainless steel, units are well-suited for handling paints, dispersions, pigments, etc.

TUBE TURNS PLASTICS, INC. Louisville, Kentucky

Unplasticized polyvinyl chloride injection molded fittings and flanges with excellent physical properties that are non-toxic, completely inert.

TURNER & HAWS ENGINEERING CO., INC. Boston, Massachusetts

Dust collectors for ultra high efficiency filtration of micron-range particles.

UNION CARBIDE & CARBON CORPORATION Cleveland, Ohio

National Carbon Company division will show equipment made of resin-bonded impervious graphite: shell and tube heat exchangers, centrifugal pumps, Saunderstype valves, and armored pipe and fittings.



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The new Jerguson No. 23 Drain or Sampling Valve is completely self draining, for the valve stem seats on the outside of the valve body. It is ideal for installations where it is desirable to have the valve seat inside the wall of a vessel in order to prevent the typical condition of liquid remaining in the nipple and valve inlet.

This rugged, new Jerguson Valve has outside screw and yoke construction to meet high temperature or corrosive conditions where inside threads cannot be tolerated. The efficient outside thread design eliminates possible freezing and allows the valve stem to work freely at all times. The No. 23 Valve provides foolproof operation because the stem is constructed with a left-hand thread, thus allowing the valve handle to operate in the normal direction of standard valves.

The No. 23 is recommended for pressures up to 4000 lbs. @ 100° F. or 1000 lbs. @ 750° F. Standard with 34" N.P.T. Male inlet and 3/4" N.P.T. Female outlet. Optional features include construction with an additional connection for such uses as a steaming out line, or with a reamer on the end of the stem to break away encrusted matter which may have collected on the inside vessel wall.

Write for data unit and complete



When inquiring check CP 2185 opposite last page

CHEMICAL PROCESSING

UNION STEEL CORPORATION

Low-carbon stainless steel pipe and tube that can be welded or hot worked without subsequent anneal and still maintain maximum corrosion resistance.

U.S. ELECTRICAL MOTORS INC.

Industrial electric motors with pneumatically controlled mechanical-type variable speed transmissions.

UNITED STATES GASKET COMPANY

Camden, New Jersey

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Fluorocarbon gaskets, packing, bearings, expansion joints, flexible couplings, adapters, reducers, rotary shaft seals, Raschig rings, fabricated parts.

UNITED STATES STEEL CORPORATION Pittsburgh, Pennsylvania

National Tube Division will exhibit plastic and steel pipe. Plastic pipe is 75 & 100 lb pressure-rated polyethylene, and high impact and low impact polyvinyl chloride, standard and extra strong.

VANTOM PUMP & EQUIPMENT CO.

see Cooper Alloy Corporation

HENRY VOGT MACHINE COMPANY

General-purpose gate, globe, and angle valves in sizes from 1/4 through 2" that have hard-faced renewable and and integral seats.

VOTATOR DIVISION Louisville, Kentucky

See The Girdler Company

WALKER-WALLACE DIVISION Buffalo, New York

See A. P. V. Company, Inc.

WALLACE & TIERNAN, INCORPORATED Belleville, New Jersey

Exhibit will be based on massometer and Merchen scale meter. This combination is used for continuous weighing of dry free-flowing materials.

WARREN ELECTRONICS, INC. Bound Brook, New Jersey

Automatic recorder for ultraviolet, visible, and near-infrared spectrophotometers is to be demonstrated.

WARREN STEAM PUMP COMPANY, INC. Warren, Massachusetts

Will exhibit a motor-driven model pump with a transparent body to show advantages of a screw pump.

W. M. WELCH MANUFACTURING COMPANY

Low-vacuum pumps with a special valve to admit air into exhaust cycle to prevent condensation of vapors.

WELDING FITTINGS CORPORATION

New Castle, Pennsylvania

Welding fittings in stainless, Monel, nickel, cupro-nickel, aluminum, and titanium.

WESTERN MACHINERY COMPANY

San Francisco, California

A torque-flow solids pump, and agitator conditioner for conditioning materials ahead of flotation, and a flotation cell for selective flotation of materials.

(Continued on next page)



The high speed camera pictures show the Eimco Drum Filter with cake formed on the drum, cracked and leaving the panel clean.

SAVE WITH A SNAP!

Greater savings are being realized by many companies in filter media and filter down time where the use of a snap blow is practical for the product being filtered.

Snap blow on Eimco filters is accomplished by introducing high pressure air for a fraction of a second at the discharge point. This action on a heavy salt cake is shown above taken with high speed photography. The three successive pictures were taken only seconds apart as shown by the clock.

Advantages are in being able to move the scraper

blade back so that it never touches the media and acts only as a deflector. The high pressure air helps keep the media free of blinding particles so that tonnage goes up — maintenance goes down.

Snap blow may be ordered with your Eimco filter, properly installed and regulated at the factory or, you may purchase a "snap blow" kit to install on your present filter.

An Elmco engineer will be glad to advise the practicability of snap blow on your product. Write for more information.

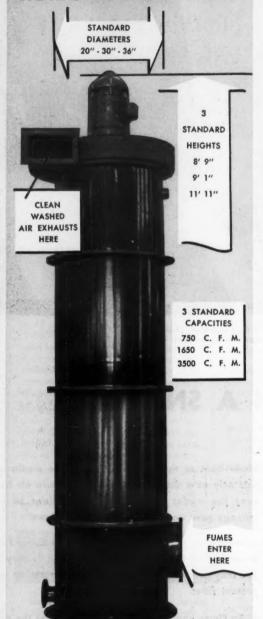
THE EIM CO CORPORATION Salt Lake City, Utah—U.S.A. Export Offices: Elmco Bldg., 52 South St., New York City

rw York, M. Y. Chicage, III. San Francisco, Calif. El Paso, Tex. Birminghosts, A.In. Duhsth, Minn. Kallagg, Ida. Baltimaro, Md. Phitsburgh, Pa. Souttle, W Pasadona, Calif. Houston, Taxes Vancouver, B. C. Landon, England Gatechand, England Paris, France Millar, Raty Johanneshurg, South Africa.



When inquiring check CP 2186 opposite last page

NOW, CORROSIVE FUMES EFFICIENTLY REMOVED BY NEW "PINT SIZED," LOW COST





FUME WASHER

Absorbs noxious and corrosive fumes Removes irritating and abrasive dusts Supresses oil and acid mists

The Cyclonaire is surprisingly compact—will fit almost anywhere, but it does a big fume removal job formerly possible only with expensive custom-designed units. It will safely handle corrosives in low concentrations normally encountered in fume scrubbing operations. Removal of many gases (of 1% concentration or less)—is up to 99.9% effective. Low power requirements make it very economical to operate.

In operation the Cyclonaire is a wet bed scrubber-with an all important difference. Instead of designing the unit first, then selecting a packing . . . our engineers designed the unit around Intalox saddle packing, the most efficient industrial tower packing made. The results surprised even us. We discovered that it is possible to do a big fume removal job with a small fume washer . . . when packed with Intalox!

The Cyclonaire is constructed of steel in easy-to-assemble flanged sections, secured by split ring clamps (the 36" size is bolted). All inner and outer surfaces are protected by an inert Tygon or Tygoflex plastic coating. It can be assembled in a few hours, or disassembled and reinstalled in a different location in an equally short time.

The Cyclonaire is available in three standard sizes and three capacities. (See illustration.) It is shipped as a "package" unit complete with motor and adequate Intalox packing. Special parts are available to convert standard units for unusual applications.

If you have a fume, dust or mist problem it will pay you to look into the low cost . . . pint sized . . . high efficiency Cyclonaire.

Get all the facts... Get the complete story on this modern money saving, space

saving method of fume elimi-

PROCESS EQUIPMENT DIVISION

U. S. STONEWARE

AKRON 9, OHIO

CHEM SHOW

(Continued from preceding page)

WESTINGHOUSE ELECTRIC CORPORATION Pittsburgh, Pennsylvania

Completely static, contactless control designed to perform same switching functions as relays in chemical and petroleum processing controls.

EDWIN L. WIEGAND COMPANY Pittsburgh, Pennsylvania

Exhibits Chromalox electric heat exchangers, immersion heaters and controls, far-infrared equipment including new Metaray far-infrared all-metal elements.

WHEELABRATOR CORPORATION

Mishawaka, Indiana

Will exhibit airless blast cleaning machine, Liquamatte wet blast cleaning machine, and a Dustube fume and dust collector.

WHITEHEAD METAL PRODUCTS COMPANY New York, New York

Pipe, tube, valve, fittings of aluminum, copper, Monel, nickel, stainless, and plastics.

YARNALL-WARING COMPANY Philadelphia, Pennsylvania

Impulse steam traps, strainers, and spray nozzles. Traps for loads from very low to very high will be demon-

OTTO H. YORK CO., INC. West Orange, New Jersey

Will exhibit transparent working model of a bubble-cap column operating with a Yorkmesh demister. The wiremesh demisters have high separation efficiency and low pressure drop.

Of course we'll be there too!

We hope you'll take a few minutes to visit with us in our booth at the Exposition. Several of our editors will be on hand to talk things over with you, whether it's about what's "wrong or right" in CHEMI-CAL PROCESSING, potential stories, your processing problems . . . or even why the Dodgers won the Series.

This is a good chance for you to tell us how we can serve you better editorially. After all, that's our job . . . so we more than welcome your suggestions. Why not jot down any of your "points for discussion" now and slip them into the folder you are taking to the Show?

We'll be looking for you . . . in Booth 610.

new literature

Industrial bulletins pertinent to the reader . . . offering data on products, processes, services

Tells how to get perfect water clarity

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Fraps

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How to remove colloids and other suspended impurities from potable water, process water, and plant wastes by use of diatomite filter aids is explained in 12-page illustrated brochure. Complete with photographs and drawings, booklet describes adaptability of the materials to various filters, and cites representative installations where it is being used.

"Get Perfect Water Clarity with Celite Filtration" is issued by Johns-Manville, Dept. CP, 22 East 40th Street, New York 16, New York. When inquiring specify CP 2188 on form opp. last page.

Data on high-temperature, super-strength alloys

Chemical compositions and rupture strengths of super-strength alloys suitable for high temperature applications are given in eight-page technical publication. Alloys mentioned are of the iron-chromium, iron-chromium-nickel, and related types.

Publication 170 is available by remitting 75c the copy direct to American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pennsylvania.

Synthetic fibers and fabrics — their manufacture and use

Production and uses of manufacturer's nylon and Acrilan fibers for textile applications are depicted in 24-page booklet, illustrated in both black and white and color. In addition to a sample of Acrilan fiber, a number of woven and knitted fabric swatches are included with the bulletin.

"The Fiber Story" is available on direct letterhead request to The Chemstrand Corp., Dept. CP, 350 Fifth Ave., New York 1, N.Y.

Reference file on processes

Information on engineering, design, procurement, construction, and initial operation of plants is presented in cumulative collection of technical data. Present series of eight data sheets available describe the Rotocel extractor, low temperature processes, production of fats and oils, and uranium processing.

"Chemical Plants Reference File" is issued by Chemical Plants Div., Blaw-Knox Co., Dept. CP, 930 Fort Dequesne Blvd., PO Box 778, Pittsburgh 30, Pa. When inquiring specify CP 2189 on form opposite last page.

Describes diaphragm pumps for thickened pulp

Heavy duty adjustable stroke diaphragm pumps in sizes to 6" with capacities of 92 cu ft/min are described in six-page bulletin. Explanation of simple operation that changes pulp flow from zero to maximum while pumps are operating is featured. Units are recommended for thickener underflow, metering feed to process units, and for use as filtrate pumps.

Bul P8-B9 is issued by Denver Equipment Company, Dept. CP, PO Box 5268, Denver 17, Colo. When inquiring check CP 2190 on form opposite last page.

Variety of styles and materials of construction in valves

Four-page, two-color bulletin presents cutaway views of wide variety of styles of corrosion- resistant valves. Materials of construction available are given. These include stainless alloys, nickel and nickel alloys, special bronzes, cast irons, alloy steels, aluminum, silver, hard lead, and molybdenum.

"Powell Corrosion Resistant Valves" is issued by Wm. Powell Co., Dept. CP, 2503-31 Spring Grove Ave., Cincinnati 22, Ohio. When inquiring specify CP 2191 on form opposite last page.



POLYVINYL ACETATE EMULSIONS (VINYMUL)

Unique, exclusive process gives wide variety of grades tailor-made to meet many industrial applications, such as:

Adhesives * Coatings * Interior and Exterior Water Based Paints * Paper Processes * Textile Processes * Binders * Primers * Felt and Straw Saturant * Leather Finishes * Wall Coverings * Stiffener for Fabrics. New uses being developed daily.

Tell us your requirements and we will create a grade to fit your individual needs.

SEND FOR FREE DATA SHEET

PAISLEY PRODUCTS INC.

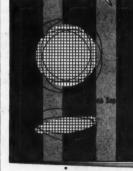
DIVISION OF MORNINGSTAR, NICOL, INC. 630 WEST 51ST STREET - NEW YORK 19, N. Y. 1770 CANALPORT AVENUE - CHICAGO 16, ILL

When inquiring check CP 2192 opposite last page



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SCREENING CATALOG



Photos, drawings, detailed specifications of equipment now successfully screening

241 different materials

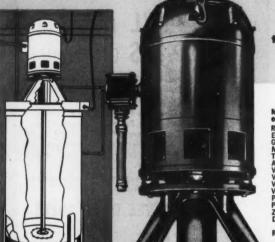
wet and dry coarse and fine heavy and light.

Southwestern Engineering Company
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SPEED AND ULTIMATE DISPERSION



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Performance guaranteed 1 2 to 20 times faster than conventional units. For dispersion, dissolving, and deagglomeration of materials.

COWLES SAVES TIME IN THESE OPERATIONS

Material dissolved or dispersed	Look	at the time!	Material dissolved or dispersed	Look Cowles	at the time!
Rosin 8	Times	Faster	Cellulose Acetate6	Times	Faster
Ester Gum		99	Methyl Cellulose2	33	71
Gilsonite		9.9	Flour Starch Dispersion, 2		6.0
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Teglac 161		93	Starch Dispersion 2		2.5
Amberol 801	B 11	11	Scrap Film Washing32		92
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Zein A		3.3	NoKarb Clay Dispersion 4		9.9
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Dispersion	R 39	2.9	N/C Dissolving 3	93	9.6
Rosin Disintegration	*		Compounding in Latex 7	**	9.9
(in water)	9 "	**	Ethyl Cellulose 4	11	9.5

You'll save space, save power, save labor, save maintenance costs with Cowles! Not only is Cowles many times faster than ordinary machines—but it speeds production on subsequent equipment, adds profits for your entire operation. And the Cowles is adaptable to many jobs, giving you terrific flexibility of production! Handles even high viscosities at great speed!

Sturdy construction... precision engineered for high-speed operation. Easy to operate and clean. The Cowles is available in many standard models. If you have a unique situation that requires other than a standard model, we will engineer equipment to meet your exact needs.

All Cowles Dissolvers, like Morehouse Mills, are sold on a guaranteed performance basis. Ask for pre-test of your materials by Morehouse-Cowles technicians. Test Cowles equipment free of charge in your plant. Inquire about time payment plans and leasing arrangements.

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- ... in milling operations, as pre- or post-mix unit.
- ... in chemical processing, as a high-speed reactor—for gas-liquid, liquid-liquid and solid-liquid reactions.
- ... in paper manufacture and conversion, as pigment dispersion unit on all types of coatings preparation of polyethylenes in wax, and all types of coating varnishes.

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MOREHOUSE COWLES Up to 4 times the volume of ordinary mills when used with conventional mixers... but when used with Cowles, the Morehouse Mill has delivered up to 10 times the volume of ordinary mills! For grinding, homogenizing, emulsifying, dispersing, disintegrating, blending... Morehouse Mills mean speed, volume, profits.

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Sales Offices in Principal Cities (Cable Address "MORESPEED", Les Angeles)

Attention! Renseignements disponibles dans des langues variées. Ecrivez-nous dans votre langue.

When inquiring check CP 2194 opposite last page

NEW LITERATURE

Eight perfume specialties: galaxy of odor values

A direct result of the development of the aromatic chemicals industry, specialties present to the perfumer an entire galaxy of odor value whose possibilities for the achievement of original fragrances are limited only by the bounds of creative imagination. Four-page folder describes origin, development and application of specialties in general. It includes a brief description of eight of manufacturer's recent additions in this category.

"The Perfume Specialty" is issued by Dodge & Olcott, Inc., Dept. CP, 180 Varick St., New York 14, N.Y. When inquiring check CP 2195 on form opposite last page.

Uses and chemistry of thiophene

Thiophene emerged from academic obscurity to the center of bustling industrial research and development just during the last ten years. Many of these products have achieved commercial status. Commercial availability now encourages renewed activity. Sixteen-page bulletin describes manufacturer's thiophene, produced from butane and sulfur, as an inherently economic intermediate for use in plastics, petroleum treating, lube additives, agricultural chemicals, rubber processing, pharmaceuticals, textile chemicals, and a number of other fields. Detailed physical and chemical properties are given. Five pages of bulletin are devoted to an extensive bibliography.

"Thiophene" is issued by Sharples Chemicals Div., Pennsylvania Salt Manufacturing Co., Dept. CP, 3 Penn Center Plaza, Philadelphia 2, Pa. When inquiring check CP 2196 on form opposite last page.

Includes manufacturer's line of thermal instruments

Complete line of manufacturer's thermal-acting instruments for indicating, recording, controlling, transmitting, compensating, and progamming temperatures from -400 to $1000^{\circ}F$ are illustrated and described in 24-page catalog. Vapor pressure filled systems are described. These instruments were recently added by the manufacturer to expand his line. Two tables compare temperature ranges and other properties of the three systems for temperature measurement.

Catalog 12-A-10 is issued by Fischer & Porter Co., Dept. CP, 48 Jacksonville Rd., Hatboro 35, Pa. When inquiring specify CP 2197 on form opposite last page.

Features optical schematic of microphotometer

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Using an optical schematic to illustrate principle of operation, eight-page catalog in two colors describes microphotometer. Instrument described is a new model comparator microphotometer that provides a convenient viewing height, a more natural position for operator's arms, a large well-lit viewing screen and relatively high magnification. Sample strip chart is included which gives iron "triplet" at 3100 Å, showing resolution of two lines 29 microns apart on original plate.

Cat CM-4-55 is issued by Jarrell-Ash Co., Dept. CP, 26 Farwell St., Newtonville 60, Mass. When inquiring specify CP 2198 opposite last page.

Treatment of makeup water with demineralizer

Seven-page technical reprint covers the treatment of makeup water with an automatic mixed-bed demineralizer. A specific installation at an Eastern utility is described in which the demineralizer is located. Factors that led to this choice of equipment and a description of the actual system itself are presented.

Technical Reprint T-137 is available from Graver Water Conditioning Co., Div. of Graver Tank & Mfg. Co., Inc., Dept. CP, 216 W. 14th St., New York 11, N. Y. When inquiring specify CP 2199 on form opposite last page.

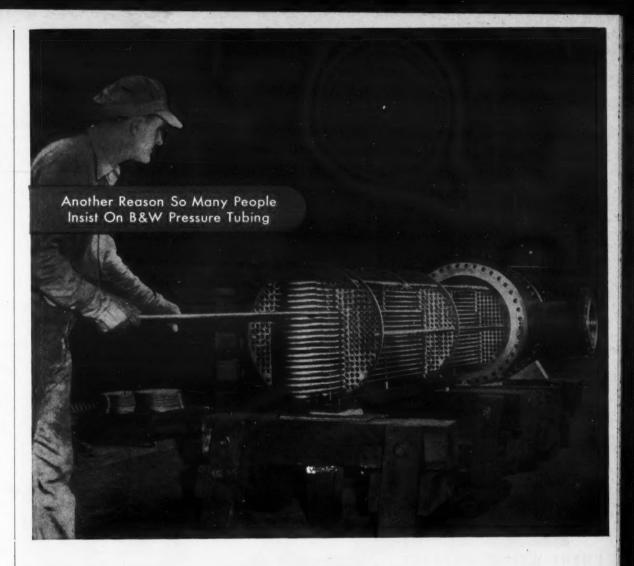
Dust collector uses glass spheres as filtering media

Ten-page, illustrated bulletin covers a wet-type dust collector which uses glass spheres as the filtering media. Efficiencies of up to 99.7% have been obtained with the unit described. It is stated that collector is self-cleaning, requires low maintenance, and has low water requirements.

Bul 55 is issued by Dept. CR, National Dust Collector Corp., Dept. CP, Machinery Hall Bldg., Chicago 6, Ill. Specify CP 2200 opp. last page.

Describes high pressure reducing and regulating valve

Photographs, drawings, uses, and construction details of high-pressure reducing and regulating valves are presented in four-page bulletin. Bul S-731 is issued by A. W. Cash Co., Dept. CP, PO Box 551, Decatur, Ill. When inquiring specify CP 2201 on form opposite last page.



TALK ABOUT TOLERANCES!!

In oil fields, refineries, chemical plants—wherever heat transfer is important—you'll find Griscom-Russell heat exchangers on the job. The Griscom-Russell Company uses B&W Pressure Tubing to help build its reputation for efficient equipment. There's no jamming or tube distortion when threading B&W tubing through tube sheets and baffle plates. This preoccupation with close tolerances—a workaday rule at both B&W and Griscom-Russell—as-

sures closer control, greater efficiency in many heat transfer operations. In addition, B&W Pressure Tubing is famous for uniform ductility, tight joints, ease of rolling in, and low installation cost in any heat exchanger or condenser application.

For the complete story of how B&W Pressure Tubing can improve your operation, why not call in Mr. Tubes, your link to B&W. Or write today for Bulletin TB-329CP.



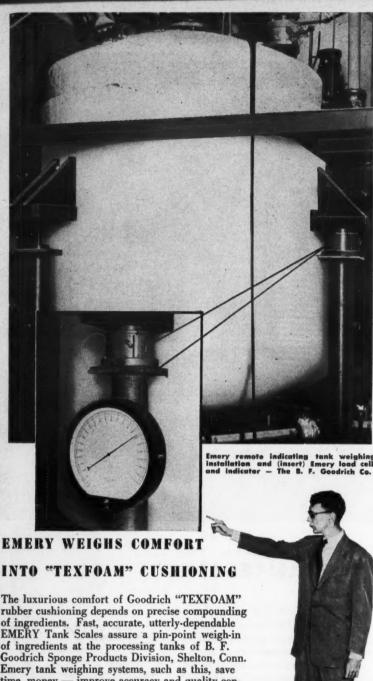
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Beaver Falls, Pa. and Milwaukee, Wis.: Seamless Tubing, Welded Stainless Steel Tubing Alliance, Ohio: Welded Carbon Steel Tubing Milwaukee, Wis.: Seamless Welding Fittings

TA-5022(P)

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When inquiring check CP 2202 opposite last page



of ingredients. Fast, accurate, utterly-dependable EMERY Tank Scales assure a pin-point weigh-in of ingredients at the processing tanks of B. F. Emery tank weighing systems, such as this, save time, money - improve accuracy and quality control in batch or continuous product processing.

Emery manufactures a complete line of precision weighing equipment of all types. Emery also offers practical, experienced engineering assistance in designing weighing systems to meet special requirements. Write us today for full information on "Weight Control" for your manufacturing and processing operations.

THE A. H. EMERY CO., NEW CANAAN 15, CONNECTICUT

When inquiring check CP 2203 opposite last page

NEW LITERATURE

Shows strain-gage prover for 200,000 psi

Illustrated with photographs and cutaway engineering drawings, two-color bulletin shows design and operating principle of proving device for strain gages, load cells, proving rings. Pressure is applied by screw and transmitted by compressed fluid.

Bul 4063 is issued by American Instrument Co., Inc., Dept. CP, 1050 Georgia Ave., Silver Spring, Md. Specify CP 2204 on form opp. last page.

Cutaway view and graphs on canned pump

A detailed cutaway view and graphs outlining operating characteristics are presented in a fourpage, two-color booklet covering "canned", hermetically-sealed motor pumps. Booklet outlines motor pumps' outstanding characteristics for high pressure, high temperature fluid systems. Complete specifications are also given.

Bulletin 57-550 is issued by Westinghouse Electric Corp., Dept. CP, Cheswick, Pa. When inquiring specify CP 2205 on form opposite last

Workbook on half-second butyrate guide for lacquer formulators

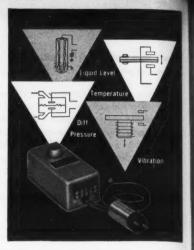
Spiral-bound 42-page workbook is a precise guide to manufacturer's Half-second Butyrate: its properties, modifications, and applications. It is designed as a quick-reference guide for those who formulate and sell lacquers. Many graphs and tables are included in the tab-indexed, two-color brochure.

"Half-second Butyrate" is issued by Eastman Chemical Products, Inc., Subsidiary of Eastman Kodak Co., Dept. CP, Kingsport, Tenn. When inquiring specify CP 2206 on form opposite last page.

Shows tensile strength tester for paper, twine, tapes

One-page bulletin describes tensile-strength tester for paper, twine, wire, aluminum foil, plastic film, tapes, to max capacity of 25 lb.

Tensile strength tester is issued by Amthor Testing Instrument Co., Inc., Dept. CP, 45-53 Van Sinderen Ave., Brooklyn 7, New York. When inquiring specify CP 2207 on form opposite last page.



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measure any variable which you can resolve into capacitance change with this one versatile unit

• Measure micrometric, macrometric displacement . . . linear or angular motion . . . vibration . . . temperature . . . pressure . . liquid level . . . humid-ity . . dielectrica, etc.

· Display, record, control variables with simplicity, versatility, flexibility, low cost, never before possible in capacitive gaging

· Sensitivity as high as 5 volts per

 Phase sensitive d-c output signal as high as ± 60 volts . . . yet stable enough to measure 0.01 volts

Here is a capacitance-to-voltage analog transducer so versatile that its usefulness is as limitless as your own imagination. Based on the famous "T-42" Ionization Transducer, Decker's new "Delta Unit" is amazingly simple and compact with no frequency stabilized oscillator, bridge, phase sensitive rectifier, or discriminator. You provide a simple power supply and indicator . . . connect the desired capacitance configuration to the Delta Unit . . . and an analagous output signal is immediately available.



Detailed information on the Decker Delta Unit—priced at \$115.00 com-plete with probe and cable—is in Instrument Data Sheet 901-1, avail-able upon request to Technical Liter-ature Section,

DECKER AVIATION CORPORATION 1361 Frankford Avenue, Phila. 25, Pa.



When inquiring check CP 2208 opposite last page

CHEMICAL PROCESSING

Screen handles variety of feeds up to four inches

Twelve-page bulletin describes screen which can handle a wide variety of feeds up to four inches in size and coal to six inches. Screen described is designed to handle a wide variety of materials such as sand, gravel, crushed stone, metallic ores, coal, coke, fertilizers, gypsum, lime, and chemicals. It can also be used to separate solid foreign particles from liquid and solutions, and for thickening, dewatering, and stream pollution reduction.

Bul 07B 6099A is issued by Allis-Chalmers Manufacturing Co., Dept. CP, 1151 S. 70th St., Milwaukee, Wis. When inquiring specify CP 2209 on form opposite last page.

Gives formulations for gelling, thickening various liquids

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Bul gives technical data and formulations necessary to thicken or gel various organic and aqueous systems with Permagel, a purified Attapulgus-type colloidal fullers earth. Bulletin has four pages, is punched for notebook insertion.

Bul SD-30 is issued by Minerals & Chemicals Corp. of America, Dept. CP, Metuchen, N.J. When inquiring specify CP 2210 on form opposite last page.

Describes pH-meter adapter for small volumes

One-page bulletin describes swing-arm adapter for manufacturer's pH meters. Adapter is designed for pH measurements on small liquid volumes.

Circular #120 is issued by Photovolt Corp., Dept. CP, 95 Madison Avenue, New York 16, N.Y. When inquiring specify CP 2211 on form opposite last page.

Seals temperatures to 1400°F, pressures to 2000 psi

Temperatures up to 1400°F and pressures up to 2000 psi can be withstood by hermetic seals described in four-page bulletin. Corrosion-resistant metals can be used for fabrication where required.

Bul AVP-55-2 is issued by Advanced Vacuum Products, Inc., Dept. CP, 18 Liberty St., Stamford, Conn. When inquiring specify CP 2212 on form opposite last page.

Easy working and long life in chemical atmospheres ...for the Lapp Valve

Non-ferrous working parts in the Lapp Valve eliminate freeze-ups from scales of corrosion. Threaded stud, yoke bushing and nuts, and plug cap are all brass or bronze, which keep the valve smoothly operative in all but the most unusual conditions of chemical atmosphere. Flange, yoke and gland are of high strength malleable or ductile iron, and are protected with baked-on Epon-base acid-proof paint. Flanges are permanently bonded to porcelain or armor with acid-proof resin cement. Write for bulletin with com-

plete description, characteristics, and specifications. Lapp Insulator Co., Inc., Process Equipment Division, 435 Wendell Street, LeRoy, New York.



When inquiring check CP 2213 opposite last page

DOW CORNING SILICONE DEFOAMERS



have proved their efficiency and versatility in countless applications. For example:

1 OUNCE KILLS FOAM IN ...

625,000 lb

sodium bromide crystallization solution

250,000 lb

molasses, vat dye solution, trioxide pickling solution, tall oil

125,000 lb

henolformaldehyde, urea formalde. hyde, asphalt, starch sizing

62,500 lb

soft drinks, 70% caustic liquor, black liquor, sulfuric acid pickling bath

And rememberboth Dow Corning Antifoam AF Emulsion and Antifoam A are physiologically harmless. Both increase production, reduce processing time, eliminate the waste and fire hazard of boil-overs.



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NOW AVAILABLE

New booklet gives complete information on Dow Corning Antifoam agents, the most efficient and versatile defoamers ever developed. Request your copy on coupon below.

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COMPANY	

When inquiring check CP 2214 opposite last page

NEW LITERATURE

Explains methods, advantages of program control

Bulletin of 24 pages explains methods and advantages of using program control. Eight pages are devoted to description and selection of instruments necessary for automatic control of process variables. Explanations are given of the various controllers, including strip chart and cam. Instrumentation required for typical process programs is

Bul 1130 is available on letterhead request to Industrial Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne & Windrim Aves., Philadelphia 44, Pa.

Describes propylene polymers

Propylene Trimer and Propylene Tetramer, two high-quality commercial propylene polymers, are covered in single-page technical data sheet. By alkylation with alkyl groups, these products form synthetic detergents and alkylaryl-type intermediates. Specs, molecular structure, and other pertinent data are covered.

Bul No. 20 is issued by Sun Oil Co., Dept. CP, 1608 Walnut St., Philadelphia 3, Pa. When inquiring specify CP 2215 on form opposite last page.

Describes mechanical seal for rotary shafts

Specifications, and typical applications of mechanical rotary shaft seal are detailed in eightpage, two-color booklet. Buna-N bellows allows operation up to 212°F at 150 psi and shaft speeds up to 2000 rpm. Silicone bellows also available allows temperatures up to 400°F at

Bul AD-150 is issued by Garlock Packing Co., Dept. CP, Maple Ave., Palmyra, New York. When inquiring specify CP 2216 on form opposite last page.

Illustrates solenoid valves

Magnetic valves for the control of water, oil, brine, air, solvents, gas, and steam are illustrated and described in 20-page bulletin. A number of different types of valves are covered and operating data are given.

"Magnetic Valves" is issued by Magnatrol Valve Corp., Dept. CP, 67 Fifth Ave., Hawthorne, N. J. Specify CP 2217 opposite last page.

HAVING PUMP TROUBLES?



In This Pump...

- The fluid does not contact may. ing parts, hence no corrosion or
- No seals, packing glands or stuffing box to leak.
- No piston cups to wear and replace.
- No lubrication bearings sealed for life.
- Easy to clean and maintain,

ROCKWELL

Fluid handling chamber is made of required comsion- or abrasion-resistant metal or material. Suction lift to 25 ft.; discharge head to 150 ft. Write for Bulletin 700.



W. S. ROCKWELL COMPANY

BUTTERFLY VALVES . SLIDE VALVES . AUTOMATIC VALVES

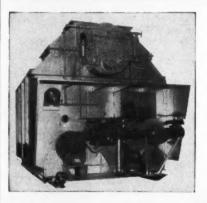
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Sales Representatives in Principal Cities

When inquiring check CP 2218 opposite last page

for accurately controlled high temperature at low pressure:

PACKAGED DOWTHERM VAPORIZERS



Piped, wired and entirely assembled before shipment, Union Type MH Packaged Dowtherm Vaporizers are built in capacities from 4,000,000 to 15,000,000 BTU/hr, for use with Dowtherm or other heat transfer media. Their compact, divided tube bank design assures uniform gas flow across the heating surface. With greater heating surface per BTU provided, fluid overheating is prevented. Designed for heating with oil, gas, waste heat or special fuels, MH Vaporizers are installed indoors or out—wherever high temperature, low pressure heat is

required in the process industries.

Union also produces a complete line of process heating equipment in capacities from 50,000 to 30,000,000 BTU/hr.

For detailed information without obligation, write.

1555 Cascade Street



When inquiring check CP 2219 opposite last page

Ductile iron fabrication service outlined

Manufacturing facilities, testing equipment, and engineering service available at ductible iron plant are tabulated in four-page, two-color pamphlet. Photos illustrate equipment and unusual fabricated pieces. Case history on solving of difficult casting problem is given.

"Ductile Iron Castings" is issued by Bethlehem Foundry and Machine Co., Dept. CP, Union Station, Bethlehem, Pennsylvania. When inquiring specify CP 2220 on form which is located opposite last page.

Color paste concentrates for polyester resins

Tabular descriptions of "4000" series color pastes for coloring polyester resins occupy two pages on three-page technical bulletin. Covered are the features of the pastes: stir-in consistency, shelf stability, no inhibitory effect on cure, and heat-, light-, and catalyst-fastness.

Bul 160 is issued by Claremont Pigment Dispersion Corp., Dept. CP, 110 Wallabout St., Brooklyn 11, N.Y. When inquiring specify CP 2221 on form opposite last page.

Gives performance figures on industrial fans

In addition to information on two recently developed fans, 40-page catalog gives specifications, dimensions, and performance figures on eighteen other types of industrial ventilating units. Information on intake units, unit heaters, and accessories is also given.

Cat A-109A is issued by Hartzell Propeller Fan Co., Dept. CP, Piqua, Ohio. When inquiring specify CP 2222 on form which is located opposite last page.

Properties of stainless pipe and tubing

Mechanical properties, creep strength, physical properties, analyses, and oxidation resistance of nine stainless tubing steels are given in six-page bulletin. Information on stainless pipe is also included

Data folder TB-355 is issued by Tubular Products Div., The Babcock & Wilcox Co., Beaver Falls, Pa. When inquiring specify CP 2223 on form opposite last page.

USE STRAINERS? USE YARWAYS



Use pipeline strainers in your plant? If so, you've plenty of reasons for using YARWAY Fine Screen Strainers.

Some of the reasons are these:

- Available in iron or steel with rust-resistant finish, also bronze, stainless steel and aluminum.
- Dutch weave Monel woven wire screens have high mechanical strength, extra fine straining service. Also perforated bronze, monel or stainless steel.
- Easy to remove screen caps with straight threads to assure proper alignment of screen.
- 10 standard sizes from ½" to 3". Larger sizes to order.
 Also flanged and socket-weld connections.
- Stocked and sold by over 300 industrial distributors in the United States, Canada and abroad.

Write today for Yarway Strainer Bulletin S-204, and name of nearest distributor.

YARNALL-WARING COMPANY 125 Mermaid Avenue, Philadelphia 18, Pa.



Unscrew cap and screen comes out with it.
When replacing, put screen in cap, then screw cap into body. Straight threads assure correct alignment, no screen distortion. Cap is tapped for pipe plug or blow-off line.



FINE SCREEN STRAINERS

When inquiring check CP 2224 opposite last page

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every Chemiseal Expansion Joint is pressure tested at the plant

(and Flexural Tested, too, for Special Requirements)



To be sure that Chemiseal Expansion Joints and Flexible Couplings not only protect the costly chemical piping which they connectbut will also meet the service pressure requirements of every installation with a wide margin of safety-each is individually pressure tested before leaving the plant. And for special requirements, they are flexural tested

Use these Safe Seals that absorb shock, vibrations, thermal expansion and contraction-Correct misalignment of piping-Eliminate gaskets, adaptors, and slip joints-Connect unlike piping ends and nozzles-Are as chemically impervious as the piping they connect because they are made of duPont TEFLON.

Ask your Industrial Distributor or write for Bulletin FC-952.

UNITED STATES GASKET CO. Camden 1, New Jersey



FABRICATORS OF FLUOROCARBONS AND OTHER PLASTICS

Representatives in principal cities throughout the world

When inquiring check CP 2225 opposite last page

NEW LITERATURE

Pumping problems - a case history

Subject of eight-page bulletin is the manufacture of phosphatic fertilizers. The case in point pumping problems. Solutions to these problems are discussed, along with corrosion considerations. Various pump installations in the manufacturing process are illustrated. Information presented in this bulletin on specific pumps and their performance is intended as a guide to service expectancy under both good and severe operating conditions.

"Worthite News", Vol V, No. 3, is available from Centrifugal Pump Division, Worthington Corporation, Dept. CP, Harrison and Worthington Streets, Harrison, N. J. Specify CP 2226 opposite last page.

Illustrates portable DC temperature bridges

Describing DC temperature bridges designed for temperature and temperature-difference measurements of moderate accuracy by resistance thermometer method, two-page bulletin includes illustrations of each bridge, diagrams of circuit, and lists specifications.

Data Sheet E-33 [2] is issued by Leeds & Northrup Co., Dept. CP, 4934 Stenton Ave., Philadelphia 44, Pa. When inquiring specify CP 2227 opp. last page.

Detailed information on gate valves

Construction details, working pressures, sizes, and other detailed information are given on line of iron body gate valves and bronze gate valves in two two-page folders.

Form 1005 and 1006 are issued by The Ohio Injector Company, Dept. CP, 100 Ejector St., Wadsworth, Ohio. Specify CP 2228 opposite last page.

FILTROX UNIVERSAL-RESIST FILTER

for:

- High Temperatures
- Corrosive Liquids
- High Valence Liquids

- Supplied for any degree of permeability - for pre-filtration, fine filtration or sterilizing filtration. Fully enclosed, dripless design. Operates by gravitation or pump. Capacity 25 to 250 gals per hour, depending on degree of turbidity.



*Special heat resisting glass construction permits sterilization by steam or superheated water.



BUHLER BROTHERS, INC.

Engineers for Industry Pince 1860 2121 STATE HIGHWAY #4, FORT LEE, NEW JERSEY

When inquiring check CP 2229 opposite last page



It's an article in CHEMICAL PROCESSING describing a new way of solving a tough plant operating problem. In each issue you will find specific "case histories" showing how these processing problems were solved. Each article states the operating problem . . . explains the process used and gives details of how problem was solved . . . shows results

Take a look at "New Solutions" articles in this issue - they might suggest a "solution" for some of your tough processing problems.

NO

Describes woven glass pipe impregnated with Teflon

SIST

JERSEY

page

Physical and chemical properties of pipe manufactured from woven glass impregnated with Teflon are given in four-page bulletin. Piping specifications for the chemically inert plastic pipe are included.

Bul FTL-1 is issued by Resistoflex Corp., Dept. CP, 37 Planson St., Belleville 9, N. J. When inquiring specify CP 2230 on form opposite

Lists metallurgy and chemistry of titanium alloy

Four-page, two-color booklet features the metallurgy and chemistry, properties, and recommended heat treatment, forging, and welding procedures of high heat resistant titanium alloy. Alloy overcomes elevated temperature embrittlement and can be used up to 750°F.

Bulletin on MST 6Al-4V is issued by Mallory-Sharon Titanium Corp., Dept. CP, 980 Warren Road, Niles, Ohio. When inquiring specify CP 2231 on form opposite last page.

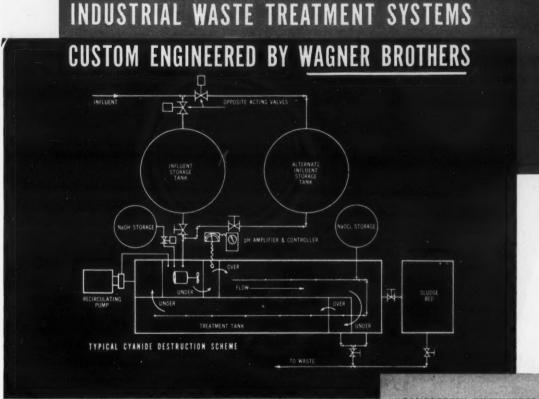
Methyl isobutyl ketone

Text, tables and graphs describe methyl isobutyl ketone, a solvent for nitrocellulose lacquers and thinners, and a number of coating resins. Fourpage data sheet has three graphs, seven references. Bul F-8637 is issued by Carbide & Carbon Chemical Co., Div. of Union Carbide & Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N.Y. When inquiring specify CP 2232 on form opposite last page.

Small particle size nitrile latices

Butadiene-acrylonitrile copolymer dispersions, called Chemigum Latices, are especially suited for use in textile, paper, ink, and coating industries. Latices 236 and 246 have a particle size approximately one-fifth that of latices comparable in nitrile content, and have excellent mechanical stability even with small particle size. Properties, description, and electron photomicrographs of these latices are given in four-page bulletin.

"Small Particle Size Nitrile Latices" is issued by Chemical Div., The Goodyear Tire & Rubber Co., Inc., Dept. CP, 1144 E. Market St., Akron 16, Ohio. Specify CP 2233 opposite last page.



Wagner Brothers' engineers will design and install any type of waste treatment system, custom engineered to accommodate your particular plant requirements.

With Wagner Brothers Waste Treatment systems, you can be sure of positive, economical waste treatment requiring a minimum of operating and maintenance cost.

Write now, giving full details of your waste problems.

COMPLETELY ENGINEERED INSTALLATIONS FOR:

- CYANIDE DESTRUCTION
- . CHROMIUM RECOVERY OR DISPOSAL
- OIL EMULSION SPLITTING
- **OION EXCHANGE**

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WAGNER	BROTHERS,	INC.

520 Midland Ave. Detroit 3, Michigan

- Please have representative call to discuss our waste treatment problems.
- We are briefly describing our present waste treatment problem on the attached sheet. Please recommend the best method of

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ADDRESS ZONE__STATE____

When inquiring check CP 2234 opposite last page



Type NU, driven by a

Life is easy for the mill operators of a leading Portland.

Three 15-foot mills are fed a mix.

Three 15-foot mills are fed a mix. ture of "high shell" and "low shell" by means of separate, variable-speed table feeders driven through through wariable-speed table feeders. Feed rate is varied by means of the speed reducers. Feed rate is varied by means of the speed reducers. variable-speed table teeders driven through Cleveland, worm gear speed reducers. Feed rate is varied by means of the adjustable telescopic pine and scrapers as well as he worm gear speed reducers. Reed rate 1s varied by means of the adjustable telescopic pipe and scrapers as well as by individual m.g. sets connected to each d.c. drive motor.

All the mill operator must do is regulate this feed rate. Individual m.-g. sets connected to each d.-c. drive motor.

All the mill operator must do is regulate this feed rate. Clevelands were chosen for this job because they are dependable known in virtually every industry for 43 Clevelands were chosen for this job because they are dependable—known in virtually every industry for 43 dependable—known in the design and precision manufacture of worm gearing—case-hardened steel worms and the property of worm gearing—case-hardened steel worms and the property of worm gearing—case-hardened steel worms and the property of worm gearing—case-hardened steel worms are property of worm gearing—case-hardened steel worms. years. Specialization in the design and precision manufacture of worm gearing—case-hardened steel worms and nickel-bronze gears have won Cleveland recognition. Compact, right-angle drive takes up little space and permits streamlined design of the machine. In addition, it Compact, right-angle drive takes up little space and permits streamlined design of the machine. In addition, it mits streamlined design of the machine and need in a provides high reduction ratios to meet any need in a mits streamlined design of the machine. In addition, it provides high reduction ratios to meet any need in a minimum of space.

Get the facts on Clevelands. Write today for Catalog 400.

The Cleveland Worm and Gear Company. 2267 Fact Get the facts on Clevelands. Write today for Catalog 400.

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The Cleveland 4, Ohio.

80th Street, Cleveland 4, minimum of space.

Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.

CLEVELAND

Speed Reducers

When inquiring check CP 2235 opposite last page

NEW LITERATURE

Catalogs precision stirrers for vacuum work

Eight-page bulletin describes recently modified precision stirrer assemblies developed for vacuum work. Stirrer assemblies described have shafts and bearings ground to clearances measured in 1/10,000 of an inch. Several of the assemblies described are suitable for moderate vacuum. Bulletin includes listing of replacement parts.

Bul PS-1 is issued by Kontes Glass Co., Dept. CP, 25 Spruce St., Vineland, N. J. When inquiring specify CP 2236 opposite last page.

High static head pumps covered in bulletin

Tables give specifications and performance data on pumps from 85 to 4500 gpm and maximum heads up to 195 feet in six-page, two-color pamphlet. Design details of single-stage, doublesuction centrifugal pumps are graphically illustrated in two-page cutaway drawing. Also included are general specifications and a typical installation.

500

Pov

for

NOV:

Bul 350-7 is issued by American-Marsh Pumps, Inc., Dept. CP, 205 Capitol Ave., Battle Creek, Michigan. When inquiring specify CP 2237 on form opposite last page.

How to keep water-using equipment clean

Best policies to follow in keeping water-using equipment clean are discussed in six-page folder. Ideal solution is proper water treatment to prevent deposits and corrosion products from accumulating, according to booklet.

"Keeping Equipment Clean," is issued by Hall Laboratories, Inc., Dept. CP, 323 Fourth Ave., Pittsburgh 30, Pa. When inquiring specify CP 2238 on form opposite last page.

Transparent plastic containers advantages and limitations

Printed in full-color, four-page brochure shows examples of clear plastic containers as packages. Standard sizes and specifications are tabulated. Four principal types of construction are explained.

"Transparent Plastic Containers" is issued by Celluplastic Corp., Dept. CP, 50 Avenue L, Newark 5, N. J. When inquiring specify CP 2239 on form opposite last page.

Technical details on fume scrubbers for pollution control

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Hall

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Complete technical details on line of fume scrubbers for pollution control are contained in 12-page bulletin. Equipment described employs water or other liquids as a scrubbing agent for control of fumes or dust and is adaptable for the handling of solid particles, liquid particles, or gases. Bulletin includes a basic discussion of scrubber problems and methods employed to solve them. Typical applications of scrubbers are illustrated with photographs.

Bul 4-R is issued by Dept. J-S, Schutte and Koerting Co., Dept. CP, Cornwells Heights, Bucks County, Pa. Specify CP 2240 opposite last page.

Answers to many piston, sealing ring problems

Eight-page brochure gives answers to many piston and sealing ring problems. Technical data and descriptions of the physical properties of the eight alloys used as well as coefficients of friction are discussed. Most heat resistant of the eight alloys, Haynes Stellite, will withstand temperatures up to 2000°F and is resistant to acids.

"Piston and Sealing Rings," is issued by Dept. B-136, Precision Piston Rings, Inc. of Indianapolis, Dept. CP, 1417-1423 Commerce Ave., Indianapolis 1, Ind. When inquiring specify CP 2241 on form opposite last page.

Chemical resistance of plastic pipe

Chemical resistance, electrical properties, and physical properties of a thermosetting plastic pipe are covered in eight-page folder. Typical applications are also given.

"Reflin Pipe," is issued by Reflin Co., Dept. CP, 5730 Kearny Villa Rd., San Diego, Calif. When inquiring specify CP 2242 opposite last page.

Powder form nickel-based alloys for hardsurfacing, brazing

Four-page, two-color folder describes uses and advantages of using powder form nickel-based alloys in hardsurfacing and brazing. Increased wear and corrosion resistance are discussed.

"Coast Metal Powders" is issued by Coast Metals Inc., Dept. CP, Little Ferry, N.J. When inquiring specify CP 2243 on form opposite last page.



The laboratory methylating equipment shown above is being explained by Dr. T.R. Patterson, head of our Methylation Department.

Your methylating problems could end here!

If you have a problem relating to the methylation of an organic compound, why not call in an Ansul specialist? It actually isn't necessary to start at the "beginning." Methylation has been a specialty of ours since 1936. The experience we have gained by methylating more than 100 compounds during the last 18 years is at your disposal to help solve your particular problem.

Our methylation laboratory is equipped to take over your methylating problem at any stage of development and come up with a practical answer. We have manufacturing facilities for producing commercial quantities of a methylated compound to your specification.

Ansul is a major producer of methyl chloride and prepared to supply you with quantities ranging from laboratory cylinders to tank car lots. Our methyl chloride is available in cylinders of 100 lbs., 140 lbs., and 1300 lbs., and tank cars of 40,000 lbs. and 78,000 lbs. Delivery is prompt.

Address your correspondence to the head of our methylation laboratory, Dr. T. R. Patterson, Ansul Chemical Company, Dept. C-35, Industrial Chemicals Products, Marinette, Wisconsin.

We will be at the "Chemical Show" Booth 521, Dec. 5-9 in Philadelphia - Stop and see us.

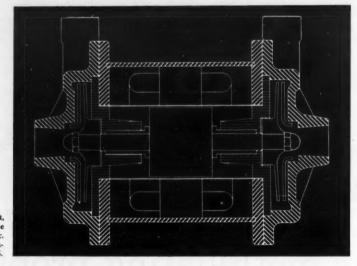


When inquiring check CP 2244 opposite last page

New "DOUBLE-ENDED"

Chempump

for high volume, high head leakproof pumping



SEE IT at the Chempump exhibit, "25th Exposition of the Chemical Industries," Dec. 5-9, Convention Hall, Philadelphia, Booths 314 & 316.

TWO PUMPS IN ONE...

Balanced thrust at all deliveries is automatically assured in the new Model DE Chempump—first "canned" centrifugal pump for two-stage operation. Essentially two leakproof pumps in one, the double-ended Chempump is ideal for handling unusually high head or high volume applications, particularly where space is at a premium.

The new "2-in-1" Chempump can be manifolded so that the two volutes work in series or parallel. For high volume pumping, parallel manifolding and identical pumping ends are used. Thrust components are equal

and opposite on either side and thereby cancel out. When supplied for series operation, automatic thrust balance, despite head differential, is maintained by design differences between the two pumping ends. As with all Chempumps, pumped fluid enters the rotor chamber of the Model DE to cool the bearings, rotor, and stator...and to lubricate the bearings. There are no seals, no stuffing boxes. Chempump can't leak!

For complete details, write to Chempump Corporation, 1300 East Mermaid Lane, Philadelphia 18, Pa. Engineering representatives in over 30 principal cities in the United States and Canada.

Chempump — first in the field . . . process proved

When inquiring check CP 2245 opposite last page

NEW LITERATURE

Working data on low-carbon steel tubing

Advantages, uses, and working data on low-carbon steel tubing are set forth in six-page bulletin. Velocity-versus-flow chart furnishes data to determine the inner diameter of tubing for hydraulic systems. This chart also shows a maximum velocity for low-pressure fuel systems, high-pressure fuel systems, and industrial oil systems.

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Bul 39 is issued by Superior Tube Company, Dept. CP, 1512 Germantown Ave., Norristown, Pa. When inquiring specify CP 2246 on form opposite last page.

Points out subplates' advantages for gasket-mounted valves

Combination of inserts, lockplates, and baseplates permits threadless gasket mounting of hydraulic valves. This eliminates pipe threads, porosity leakage, fluid passages in subplates, and pipe reducing fittings, as explained in six-page, two-color folder. Included are specifications on lockplates, subplate assemblies, and inserts.

Bulletin H-55 is issued by Petch Manufacturing Co., Dept. CP, 463 York Street, Detroit, Mich. When inquiring specify CP 2247 on form opposite last page.

Thin-wall building construction detailed in booklet

Use of thin wall sections to cut construction costs and increase usable floor space in buildings is the subject of a four-page booklet. Thin wall, lightweight sections of vermiculite concrete described offer fire protection, insulation, and windresistance.

Booklet CA-18 is issued by Zonolite Co., Dept. CP, 135 S. LaSalle St., Chicago 3, Ill. When inquiring specify CP 2248 on form opposite last page.

Uses cork borer vertically or horizontally

Illustrated bulletin shows manual cork boring machine which can be mounted vertically or horizontally. It is used on rubber stoppers and corks up to 4" diameter. Bulletin explains that a quick-change chuck is used in this device.

Bul 600 is issued by Eberbach Corporation, Dept. CP, 200 E. Liberty St., Ann Arbor, Mich. When inquiring specify CP 2249 opposite last page.

Discusses air pollution control with activated carbon

Air pollution and its control through the application of activated carbon is discussed in four-page bulletin. Literature lists and describes various types of atmospheric contaminants, and ten types of treatments to eliminate or reduce contaminants in industrial exhaust gases. Also covered are various activated carbon systems, and 62 installation categories in which activated carbon is being used to solve pollution problems.

"Air Pollution Control with Activated Carbon" is issued by Barnebey-Cheney Company, Dept. CP, Cassady at E. 8th Avenue, Columbus, Ohio. When inquiring specify CP 2250 on form opposite last page.

Industrial applications of redwood fibers

Industrial fibers produced from redwood and redwood bark are used as filtering agents, ceramic burnout fillers, thermal insulation, reinforcing agents, special papers and other applications. Four fibers, PS, PW, A, and AR are described as permanently resilient with low-moisture absorption and with marked resistance to attack by acid, fungus, and bacteria.

Bul F-28-7 is issued by The Pacific Lumber Company, Dept. CP, 100 Bush St., San Francisco, Calif. Specify CP 2251 opposite last page.

Single wrap pipe protection with tape explained

Coal tar coating for pipe, pipe joints, fittings, and couplings, in tape form, is subject of four-page folder. Tape is made with an extra thickness of coal tar to provide double-wrap protection from single-wrap application. Table of coverage and suggested applications are included.

"Tapecoat-X" is available from Tapecoat Co., Dept. CP, 1523 Lyons St., Evanston, Ill. When inquiring specify FP 2252 opposite last page.

Thermocouple protecting tubes and wells

Thermocouple protecting tubes and wells fabricated from various materials are covered in four-page bulletin. Types available, details of each, and application data are included.

Bul 11-13 is issued by Claud S. Gordon Co., Dept. CP, 3000 S. Wallace St., Chicago 16, Ill. Specify CP 2253 opposite last page.





See the new MIKRO-BuD at the MIKRO Exhibit Booth C-30 Chemical Industries Exposition Philadelphia, Pa., Dec. 5-9



This new mill, with its instant ability to shift from one particle size to another in grinding operations, is rolling up impressive performance records. By the simple turning of a small hand-wheel the mill can be quickly adjusted over the entire range of its particle size potential in a matter of seconds.

The unit, which comes in two sizes (50 hp. and 5 hp.), has been designed to produce an intermediate fine grind at high capacities. Its power economies, quick cleanability and cool grinding are features which have caused its use to be carefully investigated by discriminating buyers seeking the improved production output which it makes possible.

The MIKRO-BUD will handle a comprehensive range of dry materials for a considerable number of uses in the chemical, food, pharmaceutical, drug, cosmetic, plastic and allied industries. A test of your material on this new unit in the MIKRO Laboratory may supply the answer to increasing your pulverizing production.

PULVERIZING MACHINERY DIVISION

METALS DISINTEGRATING COMPANY, INC.
60 CHATHAM ROAD SUMMIT, NEW JERSEY

PULVERIZING . AIR CONVEYING . DUST COLLECTING EQUIPMENT

When inquiring check CP 2254 opposite last page

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*Cut Process Costs-

*Cut Product Costs-

*Cut Pollution Hazards-



PEABODY SCRUBBERS



Short cuts in processing, major recovery of product formerly lost, elimination of toxic hazards and of atmospheric pollution — these are a few of the possibilities Peabody Scrubbers offer project and process engineers interested in saving time, money and effort

Because extremely intimate contact between gas and liquid develops high transfer rates and efficient scrubbing action, Peabody Scrubbers pay dividends — year after year! To safeguard product quality and improve processing costs, look to Peabody for fast, dependable answers. Bulletin 203-B available on request.

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ENGINEERING CORPORATION

580 FIFTH AVENUE. NEW YORK 36, N.Y.
OFFICES IN PRINCIPAL CITIES
PEABODY LIMITED LONDON, S.W. 1, ENGLAND

5-138-1

When inquiring check CP 2255 opposite last page

NEW LITERATURE

Micro-focus X-ray is described

Including description of mechanical, electrical, and electronic assemblies, 12-page catalog illustrates micro-focus X-ray unit. Applications are suggested in both diffraction and microradiography techniques. Instrument features low exposure time, high resolution and provision for utilization of special crystalographic procedures. Crystalograms and diffraction patterns for several substances are included.

Catalog CH 356/2 is issued by Jarrell-Ash Co., Dept. CP, 26 Farwell St., Newtonville, Mass. When inquiring specify CP 2256 opposite last page.

Suggests applications for heating tapes

Describing electric heating tapes which can be wound around laboratory glassware or metallic industrial equipment, six-page bulletin in two colors includes drawings of possible applications. Tape described will give temperatures of 400°C and over inside a glass tube with a wall thickness of 2 mm.

"Electrothermal Heating Tape" is issued by Arthur S. LaPine & Co., Dept. CP, 6001 S. Knox Ave., Chicago 29, Ill. Specify CP 2257 opposite last page.

Tells how to handle radioactives

Pamphlet gives recommended safe practices for laboratories handling radioactive materials. Recommendations are directed both to the fire protection specialist and to designers and operators of such laboratories.

Pamphlet 801 is available by remitting 50c to National Fire Protection Assn., Dept. CP, 60 Batterymarch St., Boston 10, Mass.



When inquiring check CP 2258 opposite last page



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SOUNE POWERED Electric
TELEPHONES AND
INTERCOM SYSTEMS

There's a place for these unique communication instruments in every plant, office, commercial establishment. NO BATTERIES . . . NO OUTSIDE POWER . . . ALWAYS READY. Connect frequently called locations . . . ideal for emergency standby (no maintenance, no deterioration). Wide range of handsets, pair phones, intercom systems, executive desk sets and portable special-purpose equipment. Low in cost. Get the facts. Write today.

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the WHEELER INSULATED WIRE CO., INC.
Division of Sperry Rand Corporation

1112 East Aurora Street, Waterbury 20, Connecticut In Canada: Sperry Gyroscope, Ottawa Ltd., Ottawa

When inquiring check CP 2259 opposite last page

NO

Controlled-volume pumps provide accurate feeding

Four-page bulletin describes controlled-volume pumps for accurate chemical feeding. Information includes data on simplex and duplex models, capacities, pressures, materials of construction, and mounting dimensions.

Bul H20-1 is issued by Milton Roy Company, Dept. CP, Station H, 1300 E. Mermaid Lane, Philadelphia 18, Pa. When inquiring specify CP 2260 on form opposite last page.

High pressure valves, fittings, and tubing

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Rapidly expanding line of high-pressure valves, adaptors, reactors, autoclaves, thermocouplings, gages, fittings, and tubing are described in 26-page catalog. Pressures, sizes, and other data on each unit are given.

Cat 2055 is issued by High Pressure Equipment Co., Inc., Dept. CP, 1222 Linden Ave., Erie, Pa. Specify CP 2261 opposite last page.

Modified chelating agents

Two single page data bulletins give properties and applications of two chelating agents. Significant affect on behavior of modification ETDA are described. Both Chel DM-41 (trisodium hydroxyethyl ethylenediamine triacetate) and Chel-DM Acid (hydroxyethyl ethylenediamine triacetic acid) are described.

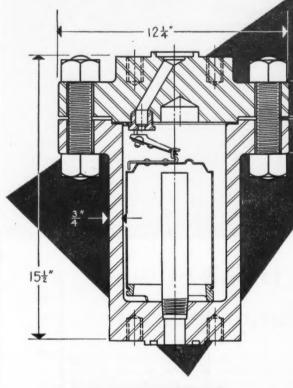
Tech buls CHEL DM-41 and CHEL DM ACID are issued by Geigy Industrial Chemicals, Div. of Geigy Chemical Corp., Dept. CP, 89 Barclay St., New York 8, N.Y. When inquiring check CP 2262 on form opposite last page.

Three-dimensional scale models have many applications

Many applications of three-dimensional models for industry are covered in eight-page illustrated folder. Among these applications are plant designs, layout and production, employe training, architecture and construction, and planning and site development. Feature of the models is that they can be reworked to determine the most efficient arrangement before the permanent layout is decided upon.

Folder on models is issued by Knight Models, Inc., Dept. CP, 549 W. Randolph St., Chicago 6, Ill. Specify CP 2263 opposite last page.

WHAT TO LOOK FOR IN A HIGH PRESSURE--HIGH TEMPERATURE STEAM TRAP....



LIST OF MATERIALS ARMSTRONG FORGED STEEL TRAPS

Part	Material
CAP AND BODY FORGINGS Up to 600 psi, 750° Up to 900 psi, 900° Up to 2500 psi, above 900°	1030 carbon steel ASTM Spec. F-1 carbon moly steel ASTM Spec. F-5 chrome moly steel
VALVE AND SEAT	Type 440 chrome steel, heat treated, standard. Stellite available.
LEVER MECHANISM	Stainless steel
BUCKET	Stainless steel
BOLTS	Class C high tensile, high tempera- ture bolting material — 125,000 min. tensile.
NUTS	Hex, semi-finish, heat treated for high pressure, high temperature service.
GASKET	Compressed graphited asbestos
INLET TUBE	Wrought iron

High pressure — high temperature service is no place to cut corners, no place to to take chances. Here are some things to think about in specifying steam traps:

1. Experience—Since right after World War One, Armstrong trap development has kept pace with the trend to higher and higher pressures and temperatures. These traps are the most widely used of any in leading power plants throughout the world at pressures up to 2400 psig—there is no finer endorsement.

2. Design—The simple, dependable Armstrong inverted bucket mechanism provides the closest thing possible to 100% assurance that the trap will not fail to open for condensate and close for steam. Extra heavy forgings provide large safety margins.

3. Materials - see list at left.

4. Price — Armstrong forged steel trap list prices range from \$95 to over \$1000. The No. 515 shown above is rated for 1500 psig at 900°F and for 2000 psig at 600°F. It lists at \$500. Armstrong prices are moderate for what you get because of high production. There is no compromise made at the expense of safety, quality and low maintenance.

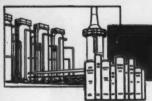
Want more facts?—Call your local Armstrong Representative or write: Armstrong Machine Works, 880 Maple Street, Three Rivers, Michigan.

Do you have Catalog J?-This 44-page Steam Trap Book is free on request.

STEAM TRAPS FOR EVERY REQUIREMENT



When inquiring check CP 2264 opposite last page



processing and engineering data

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Reynolds Number for Fluidization Studies

By JACK LOWENSTEIN
Chemical Corps Engineering Agency
Army Chemical Center

In fluidization studies, Reynolds number may have two meanings. Though found by the formula

it may refer to diameter of the particle being fluidized or to the diameter of some pipe or duct. Thus in the equation above —

Re = Reynolds number dimensionless
D = Diameter of partical ft

or diameter of pipe

depending on correlation used

G = mass rate lb/sec/sq ft

 $\mu = \text{viscosity of fluidizing gas}$ centipoise

0.0015 with a mass rate of 4.5. Read Rebend as 550. For Replipe, connect 0.5 ft (for 6" pipe) with 4.5 mass rate. Read 195,000.

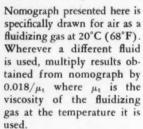
If air temperature is raised to 86°F, what will these Reynolds numbers be?

Substituting 0.0184 centipoise as the viscosity of air at 86°F¹ in the correction factor formula, a factor of 0.98 is obtained.

 $Re_{post} = 550 \times 0.98 = 540$ $Re_{post} = 195,000 \times 0.98 = 191,000$

LITERATURE CITED

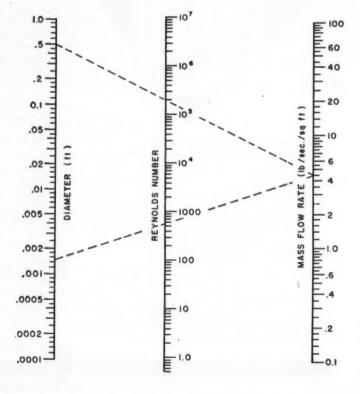
(1) PERRY, J. H., "Chemical Engineers' Handbook," 3rd Ed., p 371, McGraw-Hill Book Co., New York



Typical Example

Glass beads 0.0015 ft in diameter are fluidized in a pipe whose true inside diameter is 6 inches. If air at 68°F flows through the beads at 4.5 lb/sec/sq ft, what is the Reynolds number with respect to the beads? To the pipe?

Connect bead diameter of



-Chemical Processing — November, 1955

Use The Right Tools For Your Job!



PIONEER'S

"Hand Protection Clinic" Helps You Solve Your Industrial Glove Problems

Send a complete job description on your company stationery. Include dexterity and abrasion resistance requirements, and a complete description of chemicals or solvents used, plus notes on any extreme temperatures encountered. Our solution of your glove problem assures you of maximum employee protection and efficiency at minimum cost. Write Attn: Hand Protection Clinic.

the PIONEER Rubber Company



Comfortable new satin finish plastic coated jersey Stanflex work gloves actually outwear leather and cloth gloves. Three fully coated models and two palm coated models now available. Write for complete PIONEER line catalog today.

241 Tiffin Road, Willard, Ohio, U.S.A.
Pioneers in Industrial Hand Protection for over 35 Years

When inquiring check CP 2265 opposite last page

Effects of vacuum melting on metallic materials

Bulletin on vacuum-melted metals and alloys includes both general information and technical data. Twenty-three page publication discusses properties of various metallic materials, benefits of process to users, and fabricating and machining recommendations. Included are detailed engineering data on two vacuum-melted, high-temperature alloys now in commercial production.

Among the metallic materials listed and the effects of vacuum melting are as follows:

Nickel and Cobalt-base Alloys: Substantially improved fatigue and stress rupture properties and minimum loss of hardening elements due to oxidation are obtained.

Low Alloy Steels: Superior cleanliness, fatigue strength and transverse mechanical properties are achieved.

High Chromium Alloys: Process gives improved room temperature impact strength.

Copper and Nickel: Reduction of dissolved gases improves electronic tube applications.

Iron: Greater resistance to rupture is given. Elongation is increased up to 400% with comparable increases in tensile and yield strength.

Bearing Alloys: Four fold increase in service life is realized through greater fatigue strength.

Corrosion Resisting Alloys: Reduction of impurities and inclusions reduces galvanic corrosion or pitting.

Bulletin VM-101 is issued by Carboloy Dept. of General Electric Co., Dept. CP, East 8th Mile Rd. near VanDyke, Detroit 32, Mich. When inquiring specify CP 2266 on form opposite last page.

Characteristics, properties, processing of tetrafluoroethylene resin

History, general characteristics, manufacture, composition, uses, properties, and processing technique of Teflon tetrafluoroethylene resin are given in 60-page illustrated monograph. Processing techniques include molding, ram extrusion, calendering, and extrusion of compounded Teflon, casting and dip-coating and impregnation. Many illustrations, charts, diagrams, accompany the text. Bibliography has 21 references.

"Teflon tetrafluoroethylene resin manual" is issued by Polychemicals Dept. E.I. du Pont de Nemours & Company, (Inc.), Dept. CP, Nemours Bldg., Wilmington 98, Del. When inquiring check CP 2267 on form opposite last page.



How to Select an Economical Temperature Regulator

First of all, what does economy mean where temperature regulators are concerned? In some industries it means improvement of product or reduction of spoilage through closer control of process temperatures. In others, it means the paring down of operating expense. The price of the regulator itself is a relatively small factor.

Today's buyers are shopping for:

- Accuracy of control not only when the regulator is new, but throughout its service life
- 2. Dependability to prevent loss of production time
- 3. Minimum installation and maintenance cost

Here are a few tips on what to look for when you're installing a new or replacing an old temperature regulator —

Packless construction . . . and for this reason: A diaphragm operated, packless regulator minimizes friction. There are no closely fitted parts to stick or bind

because of uneven expansion or collection of foreign matter. Also, there's less maintenance, since no repacking is ever required.

A guarantee against wire drawing of the seats and discs. Insist on it. This guarantee in combination with single seat design assures you of tight shutoff; you avoid expensive steam losses as well as loss of product in a process application.

Broad control range. In a standard regulator you should expect a control range of 100 F. And make sure the unit you select has a vapor tension thermostat that can take over-temperatures of at least 100 F.

Easy maintenance. Why ask for grief? Your temperature regulator should be basically simple in design so that it can be serviced by average plant personnel. All parts should be readily accessible for testing and cleaning.

Double duty. There's no point in buy-

ing a separate pressure regulator when you can select a temperature regulator that combines both temperature and pressure control within the same unit.

Self-operating. Make sure you get a regulator that operates on its own initial pressure. By doing so, you avoid the purchasing and maintenance of an air compressor plus air piping, and you're sure of uninterrupted operation during electric power failures.

All of these points are important to you when it comes to selecting an economical temperature regulator. Perhaps you didn't realize you could expect so much. And perhaps you didn't realize that Spence Temperature Regulators offer all these features and more. May we send you our Bulletin T500 containing further details?

SPENCE ENGINEERING COMPANY, INC.

Walden, New York

When inquiring check CP 2268 opposite last page

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Pressure Drop Through Pipe Fittings

By D. S. DAVIS
Professor Chemical Engineering
Virginia Polytechnic Institute

Pressure drop through pipe fittings is given by

 $h = \frac{KV^2}{64.4}$

where -

h = pressure drop, feet of fluid flowing (ft)

V = velocity of fluid (fps)

K = resistance coefficient which depends on diameter of fitting¹

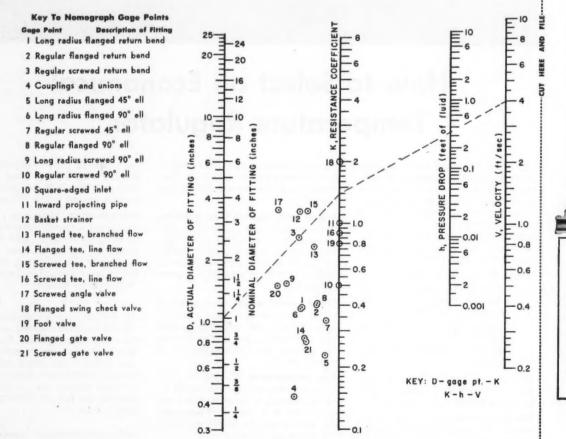
Nomograph presented here solves the equation conveniently and accurately.

Typical Example

What pressure drop can be expected through a 1" regular screwed returned bend when velocity of fluid is 4 feet per second?

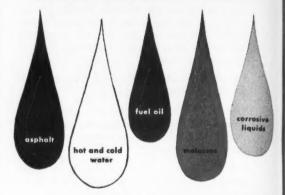
Connect one inch on diameter scale with gage point 3 (for regular screwed return bend — see table). Straight line through these points intersects K scale. Connect this K scale intersection with 4 on V scale and read pressure drop on h scale as 0.34 ft of fluid. LITERATURE CITED

(1) "Pipe Friction Manual", p 28-29, Hydraulic Institute, New York (1954)



Chemical Processing — November, 1955-

viscosities unlimited



HAYS VERIFLOW METER AND HAYS ELECTRONIC VERITROL

indicate and control liquid flow

Now virtually all fluids can be precisely measured and accurately controlled—from a remote position.

Hays VERIFLOW meter accurately measures, indicates, and totals the flow of corrosive and hard-to-meter liquids without using weigh tanks, orifice plates, or gage sticks.

With the Hays VERITROL you simply set a knob at the rate of flow desired...then, the VERITROL controls the flow of liquid at that set-rate.

Send for Pub. No. 53-766-38.



Acetic Acid, Aluminum Potassium Sulphate, Ammonia, Calcium Compounds, Carbolic Acid, Formaldehyde, Fruit and Vegetable Juices, Hydrogen Peroxide, Phosphoric Acid, Potassium Hydroxide, Sodium Compounds, Sulphuric Acid (concentrated), Stearic Acid, and many others. Automatic Combustion Control
Bailer Panels » Hoys-Penn Flowmeters
Veriflow Meters and Verifiot
Gas Analyzers » Droff Gages
Combustion Test Set » CO, Recordess
Electronic Corygen Recorders
Electronic Flowmeters
Electronic Feed Water Controls

MICHIGAN CITY 12 INDIANA

When inquiring check CP 2269 opposite last page

CHEMICAL PROCESSING

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Describes and illustrates air conditioning units

Special and standard air conditioning and refrigeration equipment is described and illustrated in four-page bulletin. Units covered include dry expansion Freon and storage coolers, condensers, and patented slug eliminator and balance loader. Piping diagrams are included.

Bul 4001 is issued by The Patterson-Kelley Co., Inc., Dept. CP, 10 Lackawanna Ave., East Stroudsburgh, Pa. When inquiring specify CP 2270 on form opposite last page.

Varied applications shown for xerography

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Four-page illustrated newsletter comments on several recent developments where electric current is used to produce facsimiles, photocopies, or original graphic representations. Much of the reporting deals with the development shown at a recent European trade fair. Uses described include direct representation of "cathode ray tube presentations" without a cathode ray tube, graphing, flaw detection, and others.

Vol. 1, Ed. 1 of Alfax News is issued by Dept. 297, Alfax Paper & Engineering Co., Dept. CP, Alden Research Center, Westboro, Mass. When inquiring specify CP 2271 on form opposite last page.

Crack-free chromium plating process described

Advantages of crack-free chromium plating process are described in four-page, two-color folder. Comparative cross-sectional and surface views are used together with photos of various applications. Superior corrosion resistance and buffability of finish is explained.

"Crack-Free Chromium Plating Process" is available from United Chromium Div., Metal and Thermit Corp., Dept. CP, 100 East 42nd St., New York 17, N.Y. When inquiring specify CP 2272 on form opposite last page.

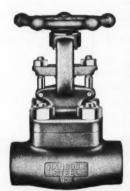
Covers line of motors from 1/2 to 30 hp

Line of single phase, polyphase, and DC motors from ½ to 30 hp is covered in eight-page catalog. Bul SDA-155 is issued by The Peerless Electric Company, Dept. CP, 1500 W. Market St., Warren, Ohio. When inquiring specify CP 2273 on form opposite last page.



GUIDE-ABILITY

that means longer life



FULL GUIDING in the Type 950 Hancock Steel Gate Valve does not permit the wedge to gall, scuff, chip or wear the seating surfaces. Four accurately-machined grooves in the valve body guide the wedge to and from the seats and prevent wedge rotation. No matter how great the flow and pressure load or the rotating force exerted by turning the handwheel, the wedge corners do not hit or rub across the seating surfaces. This close-clearance guiding protects against seat damage that frequently causes other valves to leak in as few as one opening-and-closing operation at service pressures.

The provision for precise full guiding adheres to the principle that valve seats and wedges should wear from long service, not from battering against each other. It is one of many quality features that keep Type 950 Hancock Steel Gate Valves in the line longer. Your Industrial Supply Distributor will gladly demonstrate. Phone him today.

HANCOCK VALVES

A product of

MANNING, MAXWELL & MOORE, INC.

Watertown 72, Massachusetts

In Canada: Manning, Maxwell & Moore of Canada, Ltd., Galt, Ontario



When inquiring check CP 2274 opposite last page

138a

Estimating Operating Cost for Demineralizing Water

By LENORD LIMON, Mgr.

Industrial and Boiler Feed Dept. Graver Water Conditioning Company

Nomograph by BRUCE FADER, Associate Editor

There are three basic methods to attain effective. economical water demineralization. Choice will depend on analysis of raw water, and final composition needed.

Demineralization Methods

I - Two bed demineralizer with weak anion exchanger.

Advantages: Lowest operating cost

Disadvantages: Does not remove silica, not suitable for boiler feedwater

II - Two bed demineralizer with silica removal.

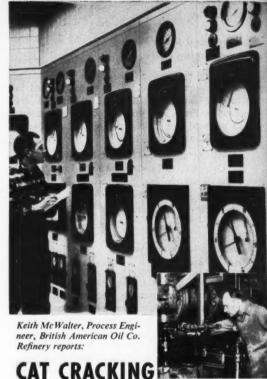
Advantages: Reduces electrolytes to same level as method I, removes silica, can be modified to three or four bed for even higher purity. Suitable for boiler feedwater

III - Mixed bed with silica removal.

Advantages: More complete removal of electrolytes, produces high quality water from raw water containing large amounts of dissolved solids (Continued on page 230)

TYPE I. TWO BED - WITHOUT SILICA REMOVAL. 0-05 0-1 WEAK HCO,- 0-1 CATION DEGASIFIER 0-0.5 50.= SiO2 TYPE II. TWO BED - WITH SILICA REMOVAL BAW WATER (PPM) 0-05 0-1 100 Ca ++ STRONG OH -0-1 CATION DEGASIFIER 50 10 0-0.5 SO.= HCO, 90 SiO, 0.00-0.10 CAUSTIC 30 ACID co, 0 504= 40 SiO2 TYPE III. MIXED BED - WITH SILICA REMOVAL 0-03 * ALL IONS EXPRESSED AS PPM CACOS. SIO2 AND CO2 AS THE COMPOUNDS STRONG SiO2 0.00-0.10 COZ ACID CATION

-Chemical Processing — November, 1955.



WITH ASKANIA CONTROLS

helps upgrade gasoline to 95 Octane ... PRACTICALLY ELIMINATES COSTLY MAINTENANCE PROBLEMS

Six years of maximum operating efficiency without a single failure! That's the enviable record of Askania control systems used on fluid bed catalytic cracking units at the British American Oil Refinery in Montreal, Canada.

Says Process Engineer Keith McWalter, "To achieve maximum operating efficiency and control over the bed level, pressure and catalyst flow, Askania controls were installed on all slide valves in the flue stack and on the turbine blower unit of our 'cat-cracking' unit. That was nearly 6 years ago and up till now, we have had nothing but optimum service from the control units."

Askania Controls are currently solving problems in many different industries. If you have control problems that are boosting your costs or lowering your product quality, Askania can help you. Write for bulletin No. 188.

ASKANIA TREGULATOR COMPANY
242 E. Ontario St.
Chicago 11. Illinois

Chicago 11, Illinois SUBSIDIARY OF GENERAL PRECISION EQUIPMENT CORPORATION



NOV

When inquiring check CP 2275 opposite last page

Provides information on package drives

Features of package drives for controlling speed of machines and other applications requiring variable speed over a wide range are described in eight-page bulletin. Drive described is enclosed in a compact, ventilated cabinet. Drive motor ranges from 5 to 200 hp. Features include magnetic amplifier generator field control, preset control for repetitive operations, and control of all machine functions from one or more remote points.

Bul 51B8166 is issued by Allis-Chalmers Manufacturing Co., Dept. CP, 1151 S. 70th St., Milwaukee, Wis. Specify CP 2276 opposite last page.

Reviews chlorinated solvents for specialized uses

Complete line of manufacturer's specialized chlorinated solvents is reviewed in 14-page bulletin. Methyl chloride, methylene chloride, chloroform, carbon tetrachloride, and perchlorethylene are described, with properties, uses, handling methods.

"Diamond Chlorinated Solvents" is issued by Chlorinated Products Div., Diamond Alkali Co., Dept. CP, 300 Union Commerce Bldg., Cleveland 14, Ohio. Check CP 2277 opposite last page.

Covers oil-hydraulic pumps and controls

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Complete line of oil-hydraulic pumps, controls, and accessories for industrial applications are included in 56-page, illustrated catalog. Each unit is described in detail, a photograph and cutaway view shown, along with application recommendations. Pertinent data are given in each case.

Catalog 5001A is issued by Vickers Incorporated, Div. of Sperry Rand Corp., Dept. CP, 1400 Oakman Blvd., Detroit 32, Mich. When inquiring specify CP 2278 on form opposite last page.

News-of-glass periodical in first issue

First issue of a new periodical on technical glassware and related information has been published. One feature story deals with a new method (being introduced currently) of packaging laboratory glassware.

Vol. 1 No. 1 of "Glass News" is issued by Doerr Glass Co., Dept. CP, Vineland, N. J. When inquiring specify CP 2279 opposite last page.

AMAZING NEW FILE ID LINING

of unplasticized PVC with easy application
of flexible PVC





Pressure filter body lined with Fligid withstands powerful chlorine dioxide bleach, at pressures to 50 pounds per square inch. Inside diameter of filter body is 14 inches, length is 5 feet.

Exposed Face of Fligid is unplasticized PVC. Resists corrosives, withstands tough wear. No plasticizer to contaminate reagents. Inner Face is resilient, flexible PVC, easily applied to any size, shape, structure.

N O W... line any steel, wood, or concrete structure with *unplasticized* Polyvinyl Chloride! New Vyflex® *Fligid* gives you the wide range chemical resistance, the superior physical toughness that modern corrosion protection demands. Yet it's easily applied to the most complicated process equipment by simple adhesive bonding techniques with no curing.

HOW? Because Fligid is actually two materials. Flexible, resilient, easily applied L-10 PVC lining material on one face... inert, unplasticized F-92 structural PVC on the other! You get the

advantages of both — the disadvantages of neither.

But that's not all. Because *Fligid* is used as a lining and not a self-supporting material, it takes temperatures as high as 190 F in many solutions. The outer face of *Fligid* is harder and more abrasion resistant than *any other lining material*, often eliminating the necessity for masonry sheathing used to provide mechanical protection.

WRITE NOW FOR FREE DATA! Get your copy of the just published technical sheets giving complete facts on new Vyflex Fligid . . . the amazing flexible-rigid laminate.



KAYKOR INDUSTRIES, INC.

Division of Kaye-Tex Manufacturing Corp.

YARDVILLE, NEW JERSEY

When inquiring check CP 2280 opposite last page



processing and engineering atta

138b

This method can be modified by addition of hydrogen or sodium cation exchangers and a degasifier.

To Find Cost

In determining chemical operating costs an analysis of raw water is needed:

- 1-using conversion factors, express all constituents as ppm CaCO₃
- 2-also express total cations (Ca, Mg, and Na) as ppm CaCO_a
- 3-obtain methyl orange alkalinity as ppm CaCO₃
- 4-calculate per cent alkalinity (methyl orange alkalinity divided by total cations, quotient times 100)
- 5-use nomograph to find cost of desired treatment

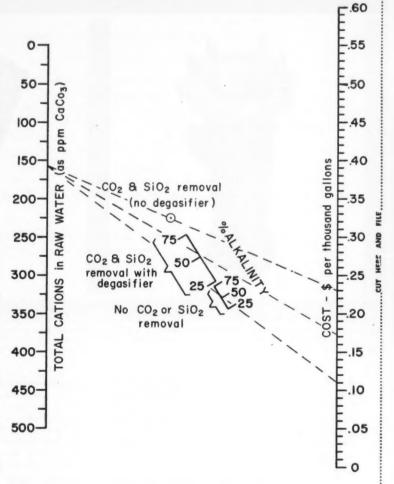
Typical Example

For analysis of raw water shown (see diagram) what are the chemical costs of each method of treatment?

Total cations add up to 160 as ppm CaCO3. Methyl orange alkalinity is 90. So alkalinity is (90/160) x 100 or 56.3%. Connecting total cations of 160 with alkalinity of 56.3 on appropriate scale we find that chemical cost per thousand gallons of water is \$0.11, 0.17, and 0.23 for the respective systems.

Estimating Operating Cost for Demineralizing Water

(Continued from page 228)



MPERATURE RECORDER ...

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NOVEN





Available with 24-hour or 7-day electric or mechanical chart drive.

Model 1000 is the latest addition to the Auto-Lite line of temperature recorders and indicators. It has evenly callbrated, 6-inch chart . . . attractive die-cast case. Various standard chart ranges from minus 40°F. to plus 550°F. The style illustrated is portable type, with capillary tubing. Also available for mounting on panel boards or walls. Obtainable with a cycle indicator for refrigeration. Priced from \$49.50. Write for further information.

THE ELECTRIC AUTO-LITE COMPAN INSTRUMENT AND GAUGE DIVISION

TOLEDO 1, OHIO



CHICAGO SARNIA, ONTARIO

When inquiring check CP 2281 opposite last page

Advantages of using polyethylene in rubber compounding

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Advantages that low mw polyethylene brings to processing of natural and synthetic elastomers is subject of eight-page brochure. Among the benefits that are listed are: reduction of shrinkage, increased gloss, replacement of costly vegetable wax, good electrical properties, improved compatibility. In addition, the polyethylene permits further economies by extending several types of elastomers.

Bul P/S 97 is issued by Semet-Solvay Div., Allied Chemical & Dye Corp., Dept. CP, 40 Rector St., New York 6, N.Y. When inquiring specify CP 2282 on form opposite last page.

Silicone insulations advantages listed

Silicone-rubber insulating system for motor and generator stator winding, called Silco-Flex, is discussed in four-page leaflet. By text and graph, the electrical, thermal, mechanical, and chemical properties of this material are described.

Bul O5R8341 is available from Allis-Chalmers Manufacturing Co., Dept. CP, 1151 S. 70th St., Milwaukee, Wis. When inquiring check CP 2283 on form opposite last page.

Explains combined instrument — records and totalizes

Four-page, two-color bulletin explains operation of a combined instrument which shows total elapsed running time on a counter and also shows a strip chart record of actual periods of operation. Bulletin explains uses of the device and its features. Typical applications are also listed.

"Time Recorder + Totalizer" is issued by Standard Instrument Corp. Div. of Heat-Timer Corp., Dept. CP, 657 Broadway, New York 12, N. Y. Specify CP 2284 opposite last page.

Installation and care of packingless pumps

Packingless self-priming centrifugal pumps are subject of 12-page brochure. Manufacturer's type G pumps are described. Instructions for installation and care, operating information, and detailed diagram are given.

Bul G-1 is issued by The LaBour Co., Inc., Dept. CP, Elkhart, Ind. When inquiring check CP 2285 on form opposite last page.



This nickel-clad steel tank processes essential oils, was designed to operate at 100 psi. pressure.

Where protection from corrosion, abrasion, and forms of product contamination such as metallic pick-up is a "must", clad steel equipment is often the *economical* answer. Under pressure, vacuum or thermal cyclical service, the high-alloy cladding will not tear away nor will bond failure permit liquid seepage between cladding and backing. If processes change, equipment modifications can be readily made without injuring the clad surface or bond. The smooth contours and joints possible with clad mean easy cleaning and low maintenance, too.

Why pay a premium for protection in your new processing equipment? Lukens Clad Steels—stainless, nickel, Monel, Inconel, copper—give you all the advantages of

these solid high-alloys with savings up to 50% in material costs.

When you're thinking of new tanks and vessels, qualified equipment builders can assist from the earliest stages of planning. Working with your engineers and consultants, they know how to help minimize first cost and assure trouble-free equipment life with clad steel. We offer the widest range of clad steels available and work closely with fabricators to help select the type most suited to your processing needs. If you would like further information, ask one of your builders or write Manager, Marketing Service, Lukens Steel Company, 750 Lukens Building, Coatesville, Pennsylvania.



LUKENS CLAD STEELS

Visit Our Exhibit at the
CHEMICAL SHOW
Dec. 5-9, 1955 Booth No. 66

STAINLESS-CLAD · NICKEL-CLAD · INCONEL-CLAD · MONEL-CLAD

PRODUCER OF THE WIDEST RANGE OF TYPES AND SIZES OF CLAD STEEL PLATES AND HEADS AVAILABLE

When inquiring check CP 2286 opposite last page



FEATURE CONTROLLED CHEMICAL COMPOSITION

. so you get better and easier control during processing . . . plus a better, more uniform end product.

SPECIFY

EL DORADO FOR

- · PURITY
- SERVICE
- UNIFORMITY

El Dorado has specialized in coconut oil products for more than half a century. That's one big reason why you can depend on the performance of El Dorado products in your formula-

FATTY. ACIDS

CAPRYLIC ELDHYCO . CAPRIC LAURIC COCONUT MYRISTIC PALMITIC

METHYL ESTERS

CAPRYLATE LAURATE CAPROATE

ELDO 18 * COCONATE

CAPRATE MYRISTATE PALMITATE

For samples and specifications, write Dept. P.

Rely on



P. O. Box 599, Oakland 4, Calif. Plants: Bayonne, N. J., Oakland, Calif.

When inquiring check CP 2287 opposite last page

NEW LITERATURE

Use of tape in pipeline protection covered

Applications and property data on manufacturers' Scotch-brand products for pipeline protection are given in 16-page, two-color booklet. Pipe wrap tapes, pipe primer, filament tape, electrical putty, plastic tape, and electrical coating are covered. Charts, showing complete physical and electrical properties for each, are included and a wide range of typical pipeline applications are pictured, with a brief discussion of each.

"Scotch Brand Products for Pipeline Protection" is issued by Dept. E5-229, Minnesota Mining and Manufacturing Co., Dept. CP, 900 Fauquier St., St. Paul 6, Minn. When inquiring specify CP 2288 on form opposite last page.

Preparation of petroleum feeds for platinum catalysts

Large-scale use of platinum as a reforming catalyst for petroleum naphthas has introduced new problems in feed preparation, due to catalyst's sensitivity, particularly to As, Pb, and S. Twelve-page paper discusses use of Attapulgus clay for removal of these feed contaminants. Descriptive, design, and operating data are packed into the booklet. Eight graphs and six tables accompany the text.

"Preparation of Petroleum Feeds for Platinum Catalysts" is issued by Minerals & Chemicals Corp. of America, Dept. CP, 210 W. Washington Sq., Philadelphia 5, Pa. When inquiring specify CP 2289 on form opposite last page.

Details, dimensional drawings of dry fluid drive

Easily read, twelve-page bulletin contains color illustrations of dry fluid drive. Selection charts, dimensional drawings, and recommended Vbelt drives are included.

Bul A-640 is issued by Dodge Manufacturing Corp., Dept. CP, Mishawaka, Ind. When inquiring specify CP 2290 opposite last page.

Describes laboratory heater with built-in rheostat

Illustrated bulletin shows laboratory heater with built-in rheostat. Power consumption is adjustable from 275 to 550 watts. List of ceramic rack-tops

Bul 627 is issued by Precision Scientific Co., Dept. CP, 3737 W. Cortland St., Chicago 47, Ill. When inquiring specify CP 2291 opposite last page.

how do you handle it?

with a IKING

Most of the nationally known com-panies pump many sticky liquids with P-O-S-I-T-I-V-E VIKING ROTARY PUMPS. The Viking "gear-within-a-gear" action and pert designs allow such material to readily enter the pump. The non-slip action of the gears forces the liquid

Capacities $\frac{1}{2}$ to 1050 GPM. 750 cataloged models. Thousands of special de-

Investigate today the smooth, even flew of Vikings handling either viscous or thin liquids. To start, ask for bulletin series 555cc.



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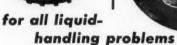
VIKING PUMP COMPANY

Cedar Falls, Iowa, U.S.A. In Canada, it's "ROTO-KING" pumps THE ORIGINAL "GEAR-WITHIN- A-GEAR" ROTARY PUMP

When inquiring check CP 2292 opposite last page



COMPLETE Jacketed **Pipe and Fluidometer Systems**



 In any processing operation where the maintenance of a uniform temperature in the process

tenance of a uniform temperature in the process pipes is necessary, a Hetherington & Berner jacketed system will assure dependable, economical production. This is equally true regardless of whether the material being handled requires a hot or cold temperature, what heating or cooling medium is used, or whether the material is corrosive or non-corrosive. Write for Bulletin J-50. If you have a liquid batching problem, involving either light or heavy liquids, jacketed or unjacketed construction, investigate the Fluidometer System. This system gives accurate, dependable and completely automatic batching and is adaptable to practically any liquid measuring problem, whether it involves gallons, liquid measuring problem, whether it involves gallons, barrels or tank cars. Write for Bulletin Fl-49. HETHERINGTON &

711 KENTUCKY AVE. INDIANAPOLIS 7, IND.

When inquiring check CP 2293 opposite last page

Describes indicating pyrometers for temp to 3600°F

Indicating pyrometers available in two styles in ranges up to 3600°F are described in two-page bulletin. Instrument scales are mirrored to avoid parallax errors. Baked and processed coil is supported by two pivots, highly polished and lapped, resting in two sapphire jewels.

Bul F 6048-1 is issued by Wheelco Instruments Div., Barber-Colman Co., Dept. CP, 1300 Rock St., Rockford, Ill. When inquiring specify CP 2294 on form opposite last page.

Use dual meter sensitivity for true voltage reading

Illustrated data sheet explains how dual sensitivity meter can be used for making "open circuit" readings of voltage produced by metal couples. Instrument has been especially designed for measurement of galvanic DC in corrosion control and cathodic protection work.

Explanation and theory, description, and specifications are included with pictures of the instrument.

Bul 1-3 is issued by Associated Research, Inc., Dept. CP, 3758 Belmont Ave., Chicago 18, Ill. Specify CP 2295 opposite last page.

Presents practical understanding of tool steels

Six basic classifications of tool steels are covered in detail in practical, 44-page book. Properties of each type are discussed and general recommendations made as to which type is suitable for a particular application.

Booklet 103 is issued by Crucible Steel Company of America, Dept. CP, PO Box 88, Pittsburgh 30, Pa. When inquiring check CP 2296 on form opposite last page.

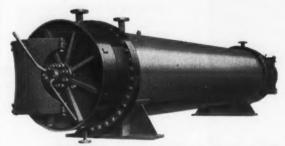
Properties and applications of aluminum alloys

Six-page bulletin explains in detail the general properties, fabricating characteristics, typical applications, and available size ranges of commercial aluminum alloys.

"Aluminum Products" is issued by Peter A. Frasse & Co., Inc., Dept. CP, 17 Grand St., New York 13, N.Y. When inquiring specify CP 2297 on form opposite last page.

Heat Exchangers Open in <u>5 Seconds</u> with new p-k Lever-Lock Door*

Substantial savings seen for processors of high-fouling liquids and others who must clean and inspect heat exchangers regularly.



CLOSED, the Lever-Lock looks like this. A single 1/6th turn of the lever draws back the lock bars.



OPENED manually with an easy pull, the tubes and tube sheet are easily accessible.

Anyone who has had to open a heat exchanger knows how time-consuming and costly it can be. Dozens of bolts must be loosened. Specialized labor is often required. Now these problems can be things of the past. p-k 's Lever-Lock Door, available on p-k heat exchangers, provides five-second access to the unit—and a new approach to exchanger design. The door "unlocks" with a 60° manual turn of a lever. In horizontal position the door then swings open easily. In vertical position, it is lifted by means of a pneumatic cylinder. Either way, it seats itself automatically on a long-life, self-sealing gasket. Other features allow Lever-Lock to be used in a wide range of applications:

- · Available in all alloys
- Pressure range from full vacuum to 300 psi
- Temperatures to 400°F. (Special alloys for subzero applications)
- Mechanical lock available to prevent opening vessel when pressurized
- No maintenance other than simple lubrication
- Available in diameters from 16" through 36"

Lever-Lock doors have been used successfully not only on p-k heat exchangers, but on p-k autoclaves and sterilizers in the chemical, textile, food processing, and rubber manufacturing industries as well. For all of them, and wherever exchangers carry high-fouling liquids or require frequent entry for cleaning and inspection, Lever-Lock doors pay for themselves through savings in time. Heat transfer can be more efficient, too, since you can afford to remove gunk more frequently. But this is only part of the story. If you see the Lever-Lock as the answer to a perplexing problem in your

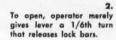
plant, why not write for all the facts, today?

The Patterson-Kelley Co., Inc., 810 Lackawanna Avenue, East Stroudsburg, Pa., and principal cities

*Pat. Pending



1. This autoclave is in vertical position with its Lever-Lock Door equipped with a pneumatic cylinder.







3. Door is lifted in 5 seconds—automatically! An hour or more of work is saved.





PATTERSON-KELLEY

(3) 257

Offices: 101 Park Avenue, New York 17 * Railway Exchange Building, Chicago 4 * 1700 Walnut Street, Philadelphia 3 * 96-A Huntington Avenue, Boston 16 and other principal cities

When inquiring check CP 2298 opposite last page

VG

Fights CORROSION HARD

ALPHA 101 AND 102 - Rigid PVC Plastic Pipe

Recommended for 3 out of 4 **Chemical Lines**

Good at licking corrosive problems. Mighty good for its perfect resistance to hydrochloric . . sulphuric . . nitric acid and more than 186 commonly used chemical corrosives — at lower temperatures and pressures.

When the right PVC Pipe handles your fluid lines you solve corrosion problems permanently! That's why

ALPHA 101 Normal Impact Unplasticized Straight PVC

ALPHA 102 High Impact Unplasticized Modified PVC Pipe increasingly used! 1/2" to 4" sizes; full line of fittings.

- . LIGHT WEIGHT
- EXCELLENT AGING
- NON FLAMMABLE
- . HIGH TENSILE STRENGTH

Send for Complete Product Date Today



NORTHFIELD ROAD ORANGE, N. J.

When inquiring check CP 2299 opposite last page



BEAN Reciprocating Pumps perform better and longer

Because of modern design features

- 1. Porcelain-lined or ceramic cylinders.
- Self-expanding piston cups.
 Free-acting ball valves.

Because the sectionalized fluid end provides STRAIGHT-LINE FLOW.

Because the all-enclosed drive end is dust-proof, and roto-splash lubricated gear teeth and bearing surfaces are Tocco hardened.

Because John Bean pumps provide more pumping power in less space, and working parts are readily accessible for easy maintenance.

Land			
FOOD MA	JOHN BEAN CHINERY AND CHEMICAL me your catalog on Jo	DIVISION CORPORATION, Dept. 1.P., Lensing 4, the Bean High Pressure Reciprocating	Mich. Pumps
NAME			
FIRM	AL PRODUCT		
STREET.		ZONE_STATE_	

Capacity: 1 to 60 GPM 100 to 800 P.S.L.



When inquiring check CP 2300 opposite last page

NEW LITERATURE

Proportional Inhibitor injection system

Two-page data sheet illustrates method for injecting polymerization inhibitor directly into oil line to reduce formation of polymers in fuel oil. Tendency to form polymers in oil during storage, shipment, or use has caused difficulty in equipment piping. System described adds chemical inhibitor according to volume of fuel oil pumped.

IDS No. 7.0-6 is issued by Industrial Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne & Windrim Aves., Philadelphia 44, Pa. Specify CP 2301 opposite last page.

Corrosion properties of Monel and nickel

Gate, globe, and check-type valves of Monel and nickel are outlined in four-page, t w o-color bulletin. Details include corrosion-resistant properties, casting compositions, cross-sectional illustrations, and applications.

Bul 9 is issued on letterhead request by Alloy Steel Products Co., Dept. CP, West Elizabeth Ave., Linden, N. J.

Describes easy-to-move bath regulator

Four-page bulletin in two colors shows a four pound constant temperature circulator for converting any container an accurate-temperature water or oil bath. Brochure includes cutaway drawing, specifications and construction details. Applications are suggested for refractometers, colorimeters, viscosimeters.

Constant temperature circulator is issued by Bronwill Scientific, Inc., Dept. CP, P. O. Box 127, Rochester 2, N. Y. When inquiring specify CP 2302 on form opposite last page.

Where can you use these high-purity chemicals?

Ammonium Paratunastate Barium Carbonate Calcium Carbonate Germanium Germanium Dioxide

Molybdenum

Phosphors, (TV tube,

CR tube, lamp)

Phosphotungstic Acid Potassium Silicate

Silicon

Sodium Sulphate Sodium Tungstate

Strontium Carbonate **Tungstate Acid**

Tungstic Acid Tungstic Oxide

Write for technical information

SYLVANIA ELECTRIC PRODUCTS INC. 1740 Broadway, New York 19, N. Y.

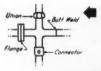
In Canada: Sylvania Electric (Canada) Ltd. University Tower Bldg., St. Catherine St., Montreal, P. Q.



When inquiring check CP 2303 opposite last page

THE NEW STANDARD IN PIPELINE ECONOMY

Speedline stainless steel fittings: SIMPLIFY PIPELINE DESIGN!



FITTING IS ADAPTABLE . . . YOU SELECT THE TYPE OF JOINT

- Simple layouts require fewer design
 - Versatility permits reduced inventory
 - Expanding feature saves time, money eliminates need for costly tools





Details of the greater design flexibility possible with Speedline Fittings—at lower cost—are contained in this new illustrated catalog. Write for a copy today. There's no obligation.

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Review of polarographic and amperometric analyses and titrations is contained in current issue of laboratory publication. Cell designs of several types (16 in all) are compared by means of accurate line drawings.

Vol. 7 No. 1 "Apparatus and Methods" is issued by E. H. Sargent & Co., Dept. CP, 4647 W. Foster Ave., Chicago 30, Ill. When inquiring specify CP 2307 on form opposite last page.

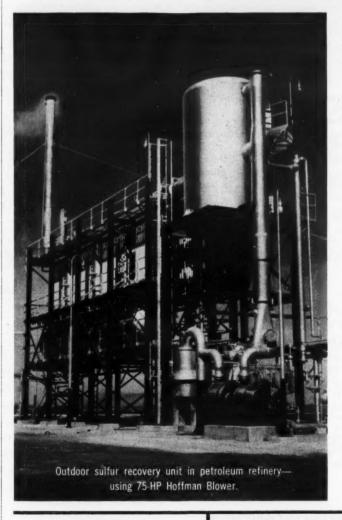
Shows track and wheel combined

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Form FT-55 is issued by The Rapids-Standard Co., Inc., Dept. CP, 342 Rapistan Bldg., Grand Rapids 2, Mich. When inquiring specify CP 2308 on form opposite last page.

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"Some Properties of the Lighter-Hydrocarbons, Hydrogen Sulfide, and Carbon Dioxide" may be obtained by remitting \$10.00 direct (\$6.00 for API members) to American Petroleum Institute, Dept. CP, 50 W. 50th St., New York 20, N.Y.

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Requirements and principles of deaeration by atomization are covered in ten-page publication. One of the illustrations is a sectional drawing in color showing water and steam flow during operation of the unit. Other photographs show the variety of combinations in heaters and storage tanks available.

Publication 4635 is issued by Cochrane Corporation, Dept. CP, 17th St. below Allegheny Ave., Philadelphia 32, Pa. When inquiring specify CP 2311 on form opposite last page.

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Catalog 425 is issued by Kinney Manufacturing Div., New York Air Brake Co., Dept. CP, 3640 Washington St., Boston 30, Mass. When inquiring specify CP 2312 opposite last page.

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Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here—if you want more data you can write manufacturer direct...

or turn to inside back cover and use the convenient "Information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct

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Liquid Density CONTROLLED continuously; accurately; automatically



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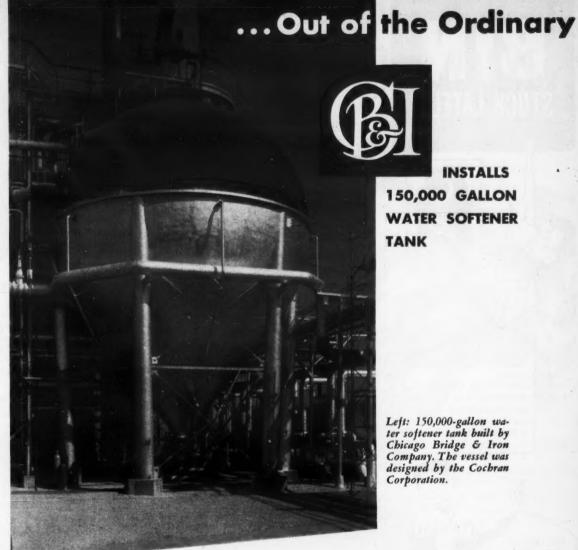
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wondering how to loosen up the material in those

troublesome bins. What am

I going to do?



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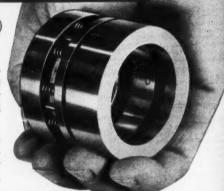
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• Swivel disks prevent seat galling;

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FIG. 2698

EDWARD FORGED STEEL STOP VALVES -

RATINGS* to 2000 lb WOG or 850 lb at 750 F

SIZES: 14, 36, 1/2, 34 and 1"

Fig. 444—Globe—OS&Y—union bonnet—screwed or welding ends Fig. 445—Angle—OS&Y—union bonnet—screwed or welding ends

Fig. 2698—Globe—inside screw—union bonnet—screwed or welding ends Fig. 2699—Angle—inside screw—union bonnet—screwed or welding ends

SIZES: 114, 11/2 and 2"

Fig. 448—Globe—OS&Y—bolted bonnet—screwed or welding ends Fig. 449—Angle—OS&Y—bolted bonnet—screwed or welding ends

*Other Edward Stop Valves available with ratings to 7500 lb WOG, 3250 lb at 1100 F

For more details on these as well as other Rockwell-Built Edward forged and cast steel valves write for the Edward Condensed

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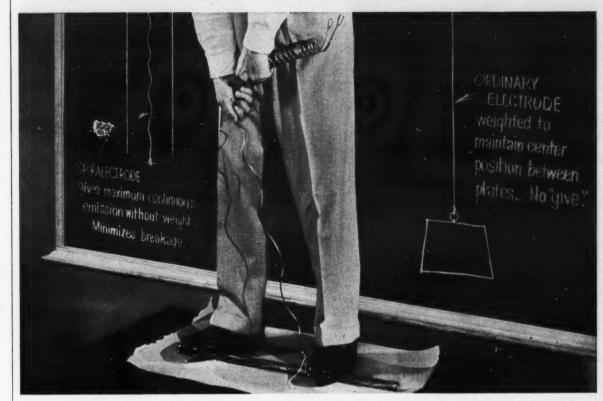
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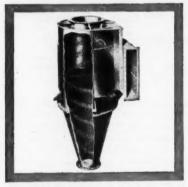
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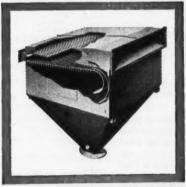
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Newport News

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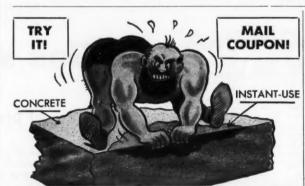
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Key Description	V	Key Description	V	Key	Description	٧	Key	Description	V	Key	Description
1708 Faucet Hot Water Heater 1709a Loss-in-weight Feeders 1709b Check Valve Feeders	R	1764A Plastic Reinforcing Material 1765 Rubberized Asphalts 1766 Masking Agent for Flavor 1767 Petrochemical Solvents	R	1818	Filters Strand Annealing Facilities Engineering Services Centritugals Insulating Firebrick	8	1881 1882	Armored Multiple Tubing Protective Coctings Chloringted Rubber Gloss Fiber Filter Cartridge Gloss Processing Equipment Variable-speed Motor Pulley	В	1935 1936	Conveyor-elevator Dry Material Conveying
1709b Check Valve Feeders 1710 Corrosion-resistant Welding	H	1766 Masking Agent for Flavor	B	1820 1821	Engineering Services	H	1882A	Chlorinated Rubber		1830	Systems Vibrating Conveyor Lift Trucks Belt Repair Kit Corrugated & Fiber Boxes Fork Lift Trucks
1710 Corrosion-resistant Welding Fittings 1711 Nitrile & Styrene Rubber	H				Insulating Firebrick	В	1883 1884	Glass Processing Equipment	18	1937 1938	Lift Trucks
1711 Nitrile & Styrene Mubber 1712a Expansion Joints	H	1768 Adipic Adia 1769 Fatty Acid Amine Condensates 1770 Tooling Plastics 1771a Glycerine Alkyds 1771b Glycerine Standards &	000000000000000000000000000000000000000	1823a 1823b	Insulating Firebrick Dry Centrifugal Collector Fabric Arrester Hydro-static Collector	H	1885a 1885b	Variable-speed Motor Pulley Transmission	0100000	1939	Belt Repair Kit Corrugated & Fiber Boxes
1712a Exponsion Joints 1712b Teflon-lined Bellows 1713b Centrifugal Filters 1713b Pressure Filters		1771a Glycerine Alkyds 1771b Glycerine Standards &	IR	1823c 1824	Hydro-static Collector Corrosion-resistant Valves	R	1885c 1885d	Variable-speed Motordrive	H	1941	Fork Lift Trucks Drum Handler
1713b Pressure Filters	1	Specifications 1771c Glycerine Properties &		1825 1826	Ultrasonic Cleaners Air Pollution Control	H	1886 1887	Transmission Variable-speed Motordrive Flexible Drive Specialty Steels Specialty Steels Protective Coatings Corrosion Inhibitor Heat Exchangers Stripless Ettings	H	1942 1943 1944	Trucks
Dryers Centritugal	1	Applications	Н	1827a	Air Hegters	Н	1888	Specialty Steels Protective Coatings			Portable Hydraulic Floor Crane
1713d Continuous Rotary Vacuum		1772 Liquid Sulfur Dioxide 1773 Curing Agent for Epoxies	IB	1827b 1827c	Blowers	H	1889 1890	Corrosion Inhibitor	A	1945 1946	Crane Salety Step Ladders Tractor Shovel
1713e Horizontal Vacuum Filter 1713f Suspended Centrifugals 1714 Non-polar Hydrocarbon Oils		1773 Curing Agent for Epoxies 1774a Cyclohexanol (state applica- tion)	I R	1827d 1827e		Ħ	1891 1892a	Stainless Fittings		1947	Oscillating Conveyor Annunciator Systems Electrical Enclosures
1714 Non-polar Hydrocarbon Oils	P	1774b Adipic Acid		1828	rans Sanitary Pumps Chemical Cutting Tool Indirect Heaters Residue Cracking Process Carbide-tipped Tools Valve Maintenance & Lubrica-	Ħ	1892b	Glassed-steel Reactors Glassed-steel Columns Glassed-steel Dryer-blenders Hydraulic Drives	IB	1949 1950	Electrical Enclosures
(state use) 1715 Double Suction Pumps 1718 Material Handling, Rotary	0000000	1774d Diglycolic Acid	Н	1829 1830	Indirect Heaters	H	1892c 1892	Glassed-steel Dryer-blenders Hydraulic Drives		1950 1951	Emergency Valves Pulsating Panel Bin Valve Covers
1716 Material Handling, Rotary	IA	1774e Hydroxyacetic Acid 1774f Cyclohexanone	H	1831 1832	Residue Cracking Process Carbide-tipped Tools	R	1892e 1892f	Seals Tower Trave		1952	Valve Covers Burn Kit
Cooling, Blending 1716A Plant Engineering 1717 Dry Feeder		1774g Fatty Alcohols 1774h Methanol		1833	Valve Maintenance & Lubrica- tion Service		1892g	Tower Trays Variable-speed Agitators Corrosion-resistant	Н	1953 1954a	Explosion-proof Germicid
1717 Dry Feeder 1718 Alumina 1719 X-ray Diffraction	H	1775 Nonionic Surface-active		1834	Fully-enclosed Motors		1892h	Construction Materials		1954b	Bacteriacidal Lamp Water-sterilization Unit
		Agents 1776 Isocyanate Resin 1777a Heat Transfer Fluid		1834.A 1835	Paper Coating Process Liquidproof Paper Applications of Aluminum Rotameters	8	1893 I 1894	Construction Materials Polyvinyl Chloride Pipe Pittings Load Variation from Stainless		1954c	Water-sterilization Unit
1720 Net-weight Feeder 1721 "Forging Ahead in Business" 1722 Polyethylene Tape 1723 Welding Fittings 1724 Acid-resisting Pumps and	IA	1777a Heat Transfer Fluid 1777b Synthetic Elastomer	IR	1836 1837	Applications of Aluminum Rotameters		1805	Tubing	H	1956 1957	Protective Clothing Radiation Catalog
1723 Welding Fittings	I	1777b Synthetic Elastomer 1777b Synthetic Elastomer 1777c Methyl Parathion 1777d Storage of Plasticizers 1777e Santolite Rezins (state which)	10	1838	Gages Mechanical Instruments Temperature Regulator Final Control Elements Flectronic Control		1896a	Protective Coatings Stainless Valves	Н	1958c	
1724 Acid-resisting Pumps and Valves	18	1777e Santolite Resins (state which)	8	1840	Temperature Regulator	Н	1896b 1896c	Corrosion-resistant Pumps Pump Design	B	1958b 1959	
1725a Filters 1725b Screen Strainers	H	1778a Formaldehyde 1778b Hexamethylene-Tetramine 1778c Paraformaldehyde	0000	1841 1842	Electronic Control		1896d	Quick-Coupling Ells, Tees, Unions	8	1960 1961	Gas Cylinder Power Roof Exhauster Gas-filled Motors Air Pollution Instruments
1725b Screen Strainers 1726 Rotary Dryers 1727 Carbon Dioxide	IA	1778c Paraformaldehyde 1779 Dispersions for Rubber	B	1843 1844	Transmitters Pyrometers	P	1897	Mechanical Seals	Ħ	1962	Gas-filled Motors
1/28 Nitropardiins	H	1780 Synthetic Workes	8	1845	Instrumentation for Evapora-	Н	1899	Rubber Sleeve Valves		1962 1963 1964	
Machine		1781 Organic Chemicals 1782 Granular Anhydrous Caffeine 1783 Ethylene Oxide	0	1846	Pneumatic Switches	H	1900 1901	Unions Mechanical Seals Coal Tar Wrapping Tape Rubber Sleeve Valves Stainless Utensils Heating Element Protective Coatings	18	1965 1966 1967 1968 1969a	Fire Protection Equipment Skin Diseases
1730a Tube Sheets & Plates 1730b Condenser & Heat Exchanger	R	1783 Ethylene Oxide 1784 Sodium Phosphote	IR.	1847 1848	Flow Indicator Densitometers	R	1902 1903a	Protective Coatings	18	1967	Skin Diseases Fluorescent Light Spur-geared Hoist Solenoid Starter
Tubes	8	1784 Sodium Phosphate 1785 Casein Dispersion 1786 Polyvinyl Acetate Copolymer	R	1849 1850	Flow Transmitter		1903b	Corrosion-resistant Kettles Cooling & Vacuum Pans Corrosion-resistant Processing		1969a	Solenoid Starter
1732 Draftless Air Diffuser	-	Emulsion	H	1851	Plant Stream Analyzers Electric Valve				18	1969b 1969d	Push Button Control Manual Starter Manual Starter with Pilot
1731 Welding Fittings 1732 Draftless Air Diffuser 1733 Heat Transfer Equipment 1734 a Dynamic Dryer 1734b Inert Gas Generator 1735 Lithium Compounds (state	8	1787 Electrical Insulation 1788 Ion Exchange Resin Catalyst 1789 Petroleum Sulfonates (state	B	1852 1853	Thermometers Level Master	8	1903d 1904	Corrosion-resistant Tanks Vinyl-clad Sheet Metal Reinforced Plastic Pipe	R		Manual Starter with Pilot Light
1734b Inert Gas Generator		1789 Petroleum Sulfonates (state use)	R	1854a 1854b	Transfer Valve	R	1904 1905	Reinforced Plastic Pipe	8	1970	Light Mixer Industrial and Laborators
	8	1790 Sodium	A	1854c 1855	Recording Receiver Valve Selection Chart	Ħ	1906 1907	Pressure Gage Protective Coatings Pinch Valves		10711	Chemicals Laboratory Equipment
1736 Acid Reclaimer 1737 Twin-drum Dryer		manium Biographanata		1050		H	1909	Strinless Steel	Н	1972	Ovens
1738a Plate Magnet 1738b Pipeline Trap 1738c Magnetic Drum	8	1792 Polyethylene Glycols 1793 Chemicals and Chemical Prod- ucts (state which) 1794 Alkylolamide 1795 Industrial Chemicals	H	1858	Minicaure Inermostats Time Recorder-totalizer Liquid Tank Gage Liquid Meters (see coupon) DC Recorder Pressure Generators Super-pressure Pumps Controlled-volume Pump for Water-treating Systems	H	1910 1911	Corrosion-resistant Valves Beadless Welded Tubing		1973	Pulverizers (state require ments)
1738c Magnetic Drum 1738d "Magnetic Ideas"		ucts (state which) 1794 Alkylolamide	R	1859 1860	Liquid Meters (see coupon) DC Recorder		1912	Turbine Pumps	8	1974 1975	Sample Snatcher Lab Ion Exchangers Laminated Fiberglas Cross
1739 Self-priming Centrifugal	H	1795 Industrial Chemicals 1796 Acetonedicarboxylic Acid	00000	1861a	Pressure Generators		1913b	Plastic Tank Lining	Ħ	1976	Laminated Fiberglas Croc
Pump 1740 Electrolytic Perforated Plate 1740A Rotary Hopper Vacuum	H	1797 Surface-conditioned Sulfurs	H	1861c	Packaged Pumping Systems		1913d	Plastic Tube & Fittings	0000	1977 1978	Laboratory Pump Scientific Apparatus
	H	1798 Resins for Plastisols 1799a Carbonate of Potash			Water-treating Systems Controlled-volume Pumps in	R	1914 1915a	Portable Drum Elevator Bin-flow Aerating Unit	R	1979	Glass-drying Racks Viscometer
741 Automatic pH Controller	B	1799b Caustic Potash 1799c Liquid Chlorine		1861e	Controlled-volume Pumps in	H	1915b	Bin Level Indicator		1981	Neoprene Filter Paper (
743 Dust Collector	H	1799d Caustic Soda 1799e Paradichlorobenzene		1861f	Paper Making Controlled-volume Pumps in Process Instrumentation	8	1917	Becdless Welded Tubing Turbine Pumps Plastic-lined Pipe & Fittings Plastic Tank Lining Plastic Molding Stock Plastic Tube & Fittings Portable Drum Elevator Bin-flow Aerating Unit Bin Level Indicator Marine Loading Arm Tractor Shovels (state requirements)		1982	Viscometer Neoprene Filter Paper (requirements) Balance Infrared Analysis Plastic Pump
745 Continuous Feeders 746 Centrifugal Pumps		1799f Tetrachloro Phthalic	7	1862	Thermocouple Testers		1918	Tale Handling		1984	Plastic Pump
747 814-1 (%		Anhydride 1799g Trichlorethylene	Н	1863 1864	Pilot Valve Gages & Receivers	B	1919 1920	Level Indicator Air Conveyor		1986	Dial Thermometers
748 Carbon Black Fillers for Silicone Rubber 749 Rubberizing Material 750 Detergent Raw Materials	R	1799g Trichlorethylene 1800 Polyurethane Foams 1801 Mold Release Agents	8	1865 1866	I ignid Matera	R	1921 1922	Air Conveyor Hand Truck Lift Trucks	R	1987 1988	Viscometers Filter Aid
749 Rubberizing Material	П		R	1867a 1867b	Process Refractometer	2	1923 1924a	Car Loading & Truck Ramps	8	1989	Laboratory Controlled- temperature Equipment
751 Flocculating Agents	ğ	1803 Propylene Trimer 1804 Wetting, Re-wetting Agents 1805 Bodying Agents 1806 Chemical Materials		1868	Centrifuggi Pump	4	1924a 1924b	Car Loading & Truck Ramps Liquid-level Controls lee-thickness Controls Non-conductive Liquids Standard Time Switches		1990	Viscometers
751 Flocculating Agents 752 Chelating Agent 753 Chlorinated Paraffin 754 Phosphorus Pentasulfide	8	1805 Bodying Agents 1806 Chemical Materials		1869a 1869b	Pumps Pipe & Fittings Heat Exchangers Cascade Coolers	7	1924c 1924d	Non-conductive Liquids Standard Time Switches	H	1992	Glass Electrodes Flexible Duct & Hose
750 Detergent Raw Materials 751 Flocculating Agents 752 Chelating Agent 753 Chlorinated Paradfin 754 Phosphorus Pentasultide 755 Propylene Glycol 756 Polyethylene (state applica-	R	1807 Stripper for Aluminum 1808 Silica Reinforcing Pigments				7	1924e 1924f	Cycle Repeating Program Clocks	ŏ	1992b	Accessories & Installation
	7	1900 Knilina		1869e 1870a	HCl Absorbers Protective Linings & Coatings	7	1924g	Time Delay Relays Auto. Reset Timers		1992c	Technical Data
	2	1811 Polyethylene		1870Ь	Field Service	7	1924h 1924i	Electronic Timers	Ö	1992d	
757 Fatty Alcohols (state which) 758 High-purity Calcined Alumina 759 Clear Polyester Resin	Ti.	1812h Deformer		1871 1872	Al-Zn Anodes Plastic Fittings	R	1925 1926	Drum Lifts Distilled Water Tanks	П	1992e	Friction-loss Data
760a Sodium Sulfide 760b Sodium Sulfhydrate	7	1812c Chemicals for Production 1812d Alkyl Aryl Polyether Alcohol 1813 Industrial Aromatics and		1873	Corrosion-resistant Diaphragn	7	1927	Chemicals by the Carload Electric Fork Truck Fork Truck		1993 1994	Filters, Mixers, Tonks Monometer
/buc Caustic Soda		1813 Industrial Aromatics and		1874	Valves Corrosion-resistant Blowers Hard-facing Powder Orifice Union Floor Surfaces Stainless Pump	7	1928 1929	Fork Truck		1995	Automatic Titrators
1760d Caustic Soda Buyer's Guide 1761 Silicone Rubber	0	Chemicals 1814 Porcelain Tower Packings	H	1875 1876 1877	Orifice Union	7	1930	Lift Truck	H	1996 1997	Chemical Mixer Fillers
1762 Costing Resin		1815 Furiural Alcohol 1816 Corrosion-resistant Roller				7		Carboy Boxes Liquid-level Controls	ä	1009	Fiber Drume
1763 Fatty Acids 1764 Plastic Reinforcing Material		Chains	B	1879 1880	Globe Valves Industrial Maintenance Paints		1933	Truck Lift		1999	Plastic Bags, Drum & Carton Liners

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Positive-displacement Pumps Duplex-displacement Pumps Plunger Pumps Regider Pumps Regider Pumps Chemical Industries Exposition Granular Material Sizing Machinery Laboratory & Pilot Plant Dispersators Laboratory & Pilot Plant Dispersators Laboratory & Pilot Plant Mill Prider Paper Electric Heaters Applications of Electric Heat Thermodynamic Steam Trap Nickel Alloy Castiags Heat-transfer Equipment Metal Fabrication (state requirements) Portable Combustion Tester Filters Filters & Screens Mixers Centrifugal Acid Pumps Valves Centrifugal Acid Pumps Valves Centrifugal Recorder Permanent Magnetic Chutes High-pressure Gages Mix-muller Potentiometer Recorder Drain or Sampling Valve Filters Fume Washer Dictomite Filter Aids Chemical Processes Diaphragm Pumps Corrosion-resistant Valves Polyvinyl Acetate Emulsions Screening Catalog Dissolvers	COD COCCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOC	2211 d 22	Mixed-bed Demineralizers Dust Collector High-pressure Reducing Yalves Pressure Tybing Trank Weighing 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Revolutionary timepiece

Unlike our cartooned depiction of the modern sun-dial wearer, a new timepiece introduced by Elgin Watch Company employs an entirely different principle to show the passage of time.

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Arctic antibiotics?

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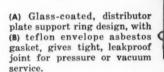
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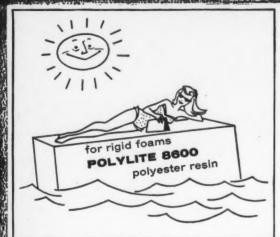


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